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Chae et al.

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(54) **METHOD OF SELECTING ONE OR MORE ITEMS ACCORDING TO USER INPUT AND ELECTRONIC DEVICE THEREFOR**

(58) **Field of Classification Search**
CPC .. G06F 3/0482; G06F 3/04842; G06F 3/0485; G06F 3/0488; G06F 3/04817; G06F 2203/04808

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See application file for complete search history.

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(30) **Foreign Application Priority Data**

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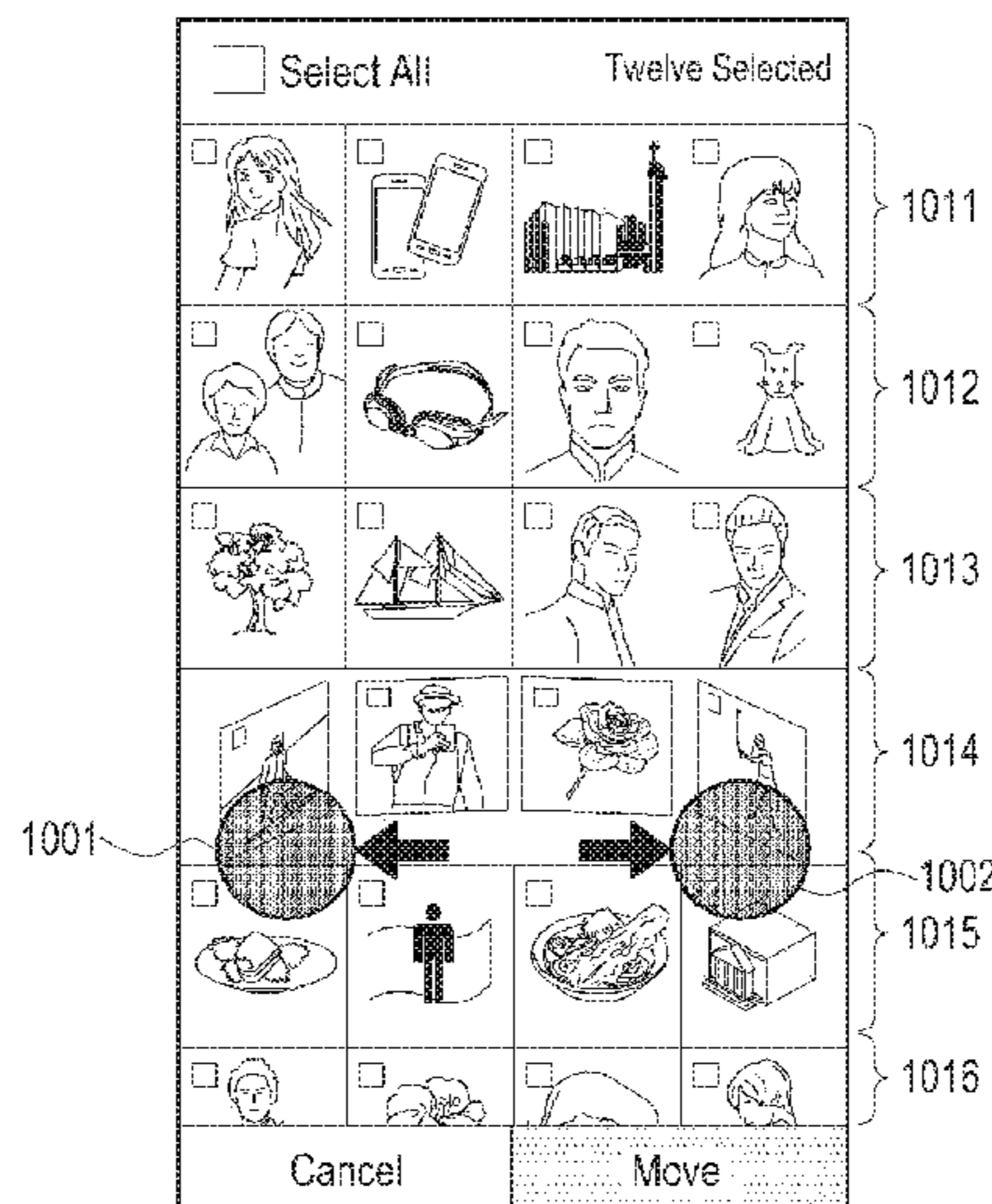
(57) **ABSTRACT**

(51) **Int. Cl.**
G06F 3/0485 (2022.01)
G06F 3/0482 (2013.01)
(Continued)

A method for selecting one or more items by an electronic device is provided. The method includes receiving a first input for selecting two more points on a screen, in response to the first input, executing a multi-selection mode for selecting one or more items, receiving a second input which is inputted in succession to the first input, and in response to the second input, selecting the one or more items.

(52) **U.S. Cl.**
CPC **G06F 3/0482** (2013.01); **G06F 3/0485** (2013.01); **G06F 3/0488** (2013.01); **G06F 3/04842** (2013.01); **G06F 2203/04808** (2013.01)

19 Claims, 17 Drawing Sheets



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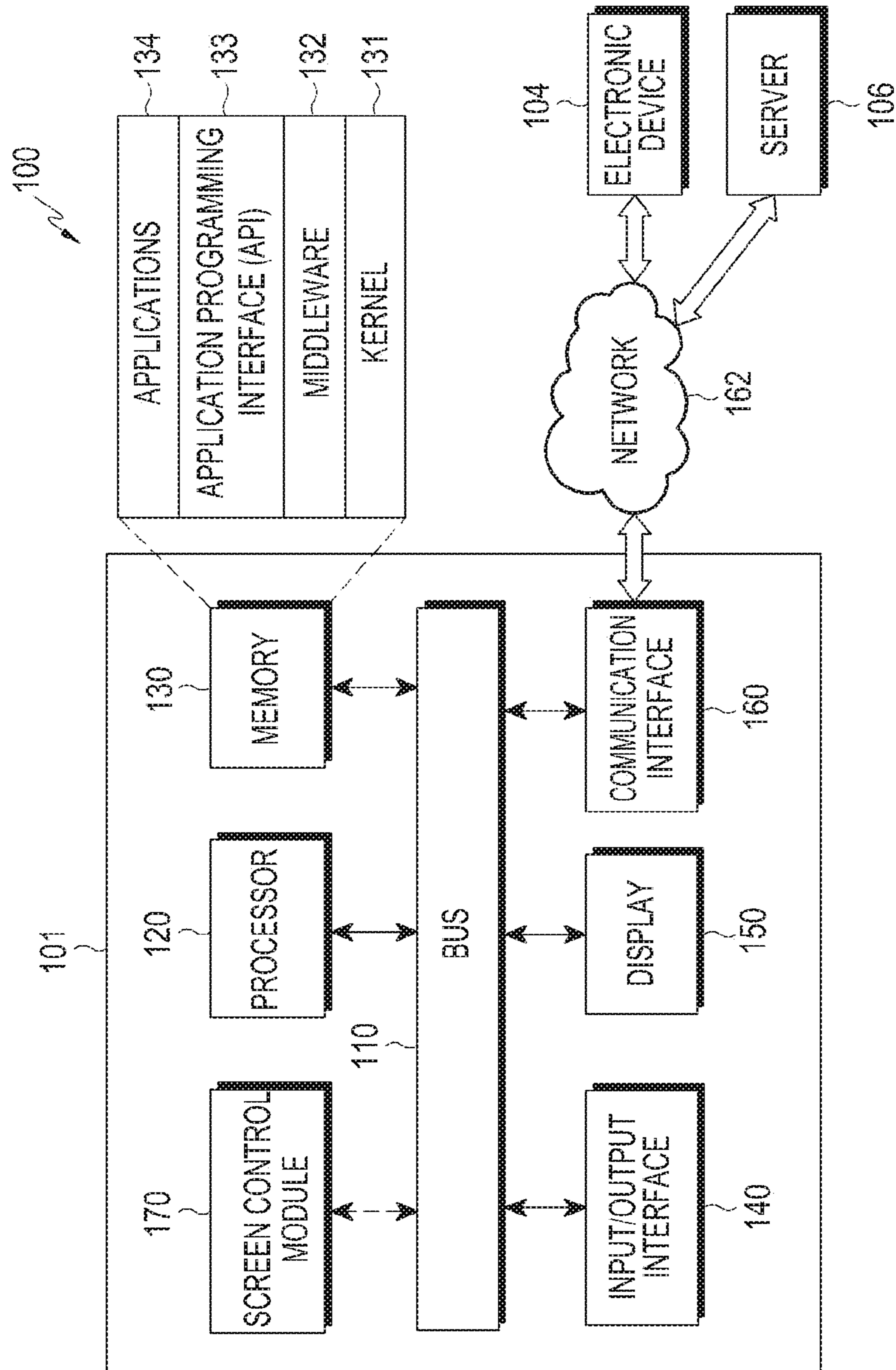


FIG. 1

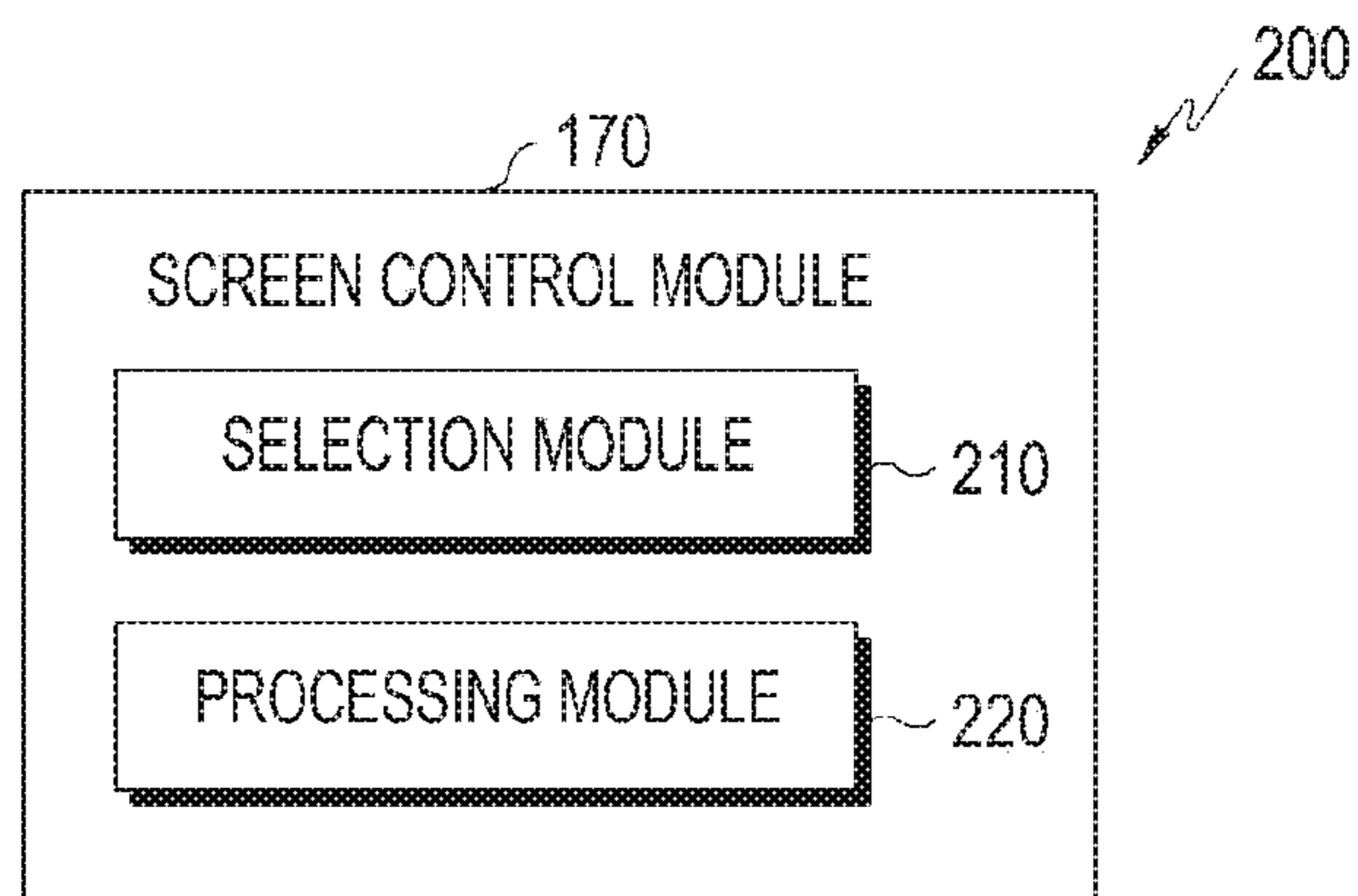


FIG.2

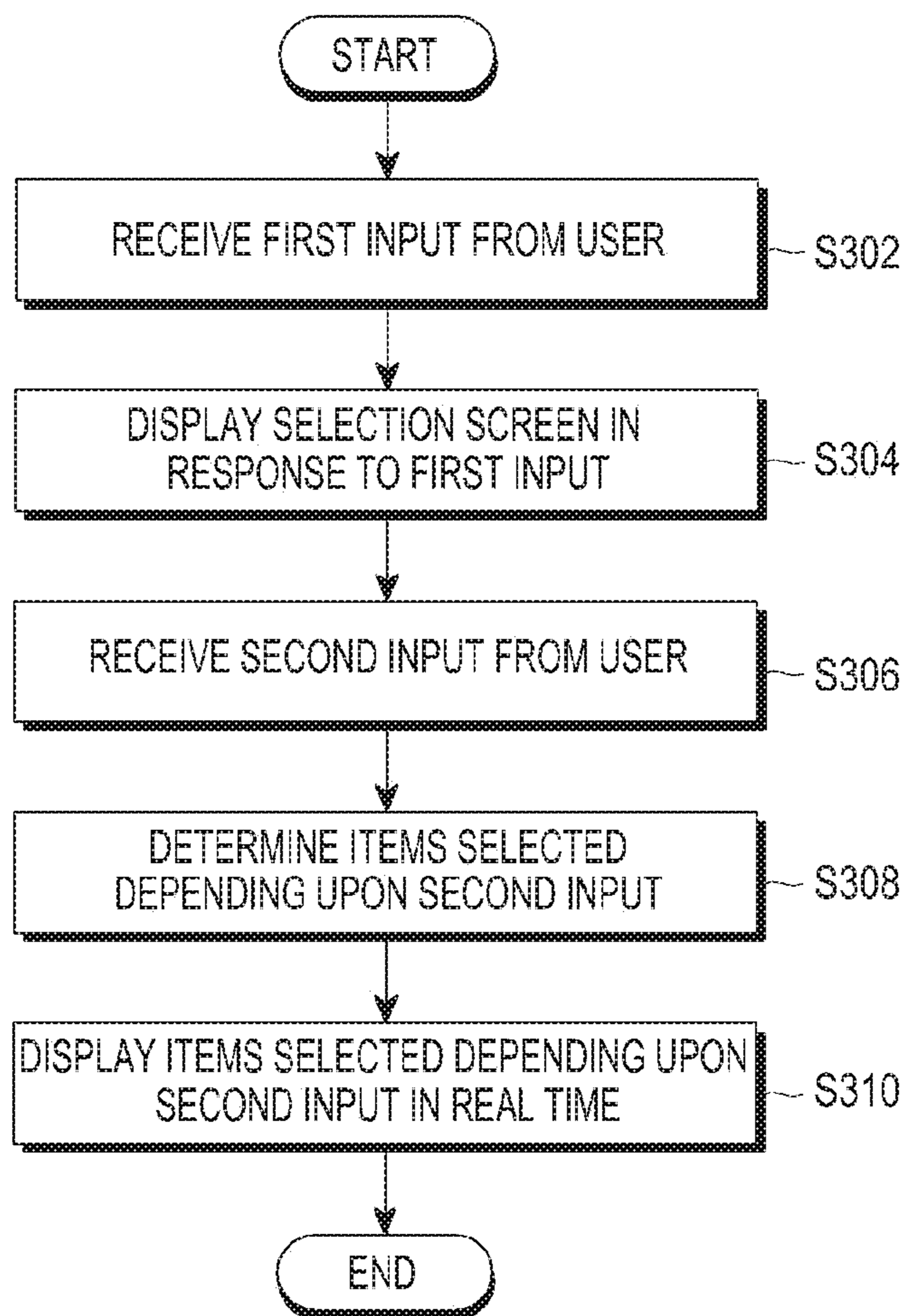


FIG.3

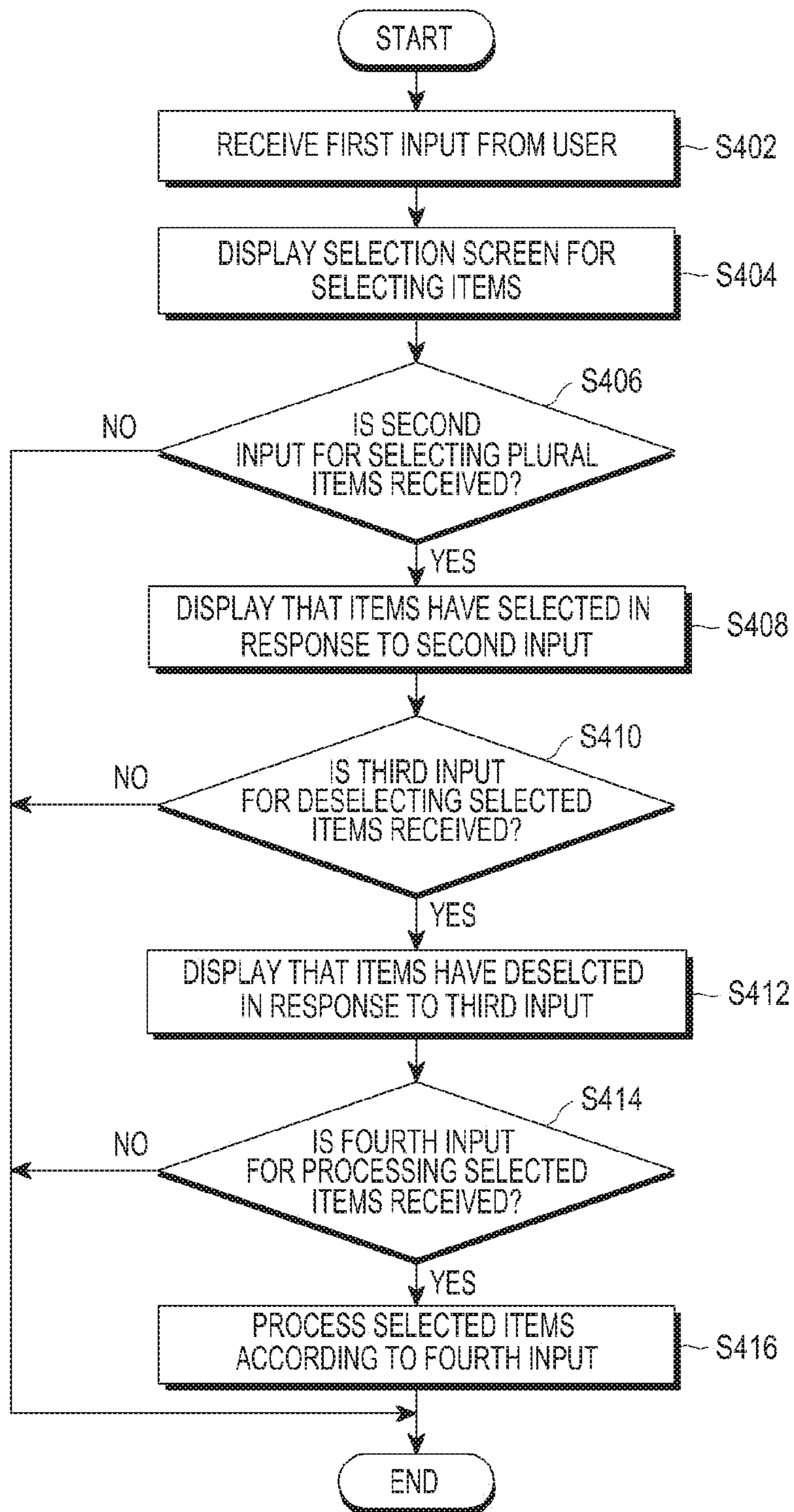


FIG. 4

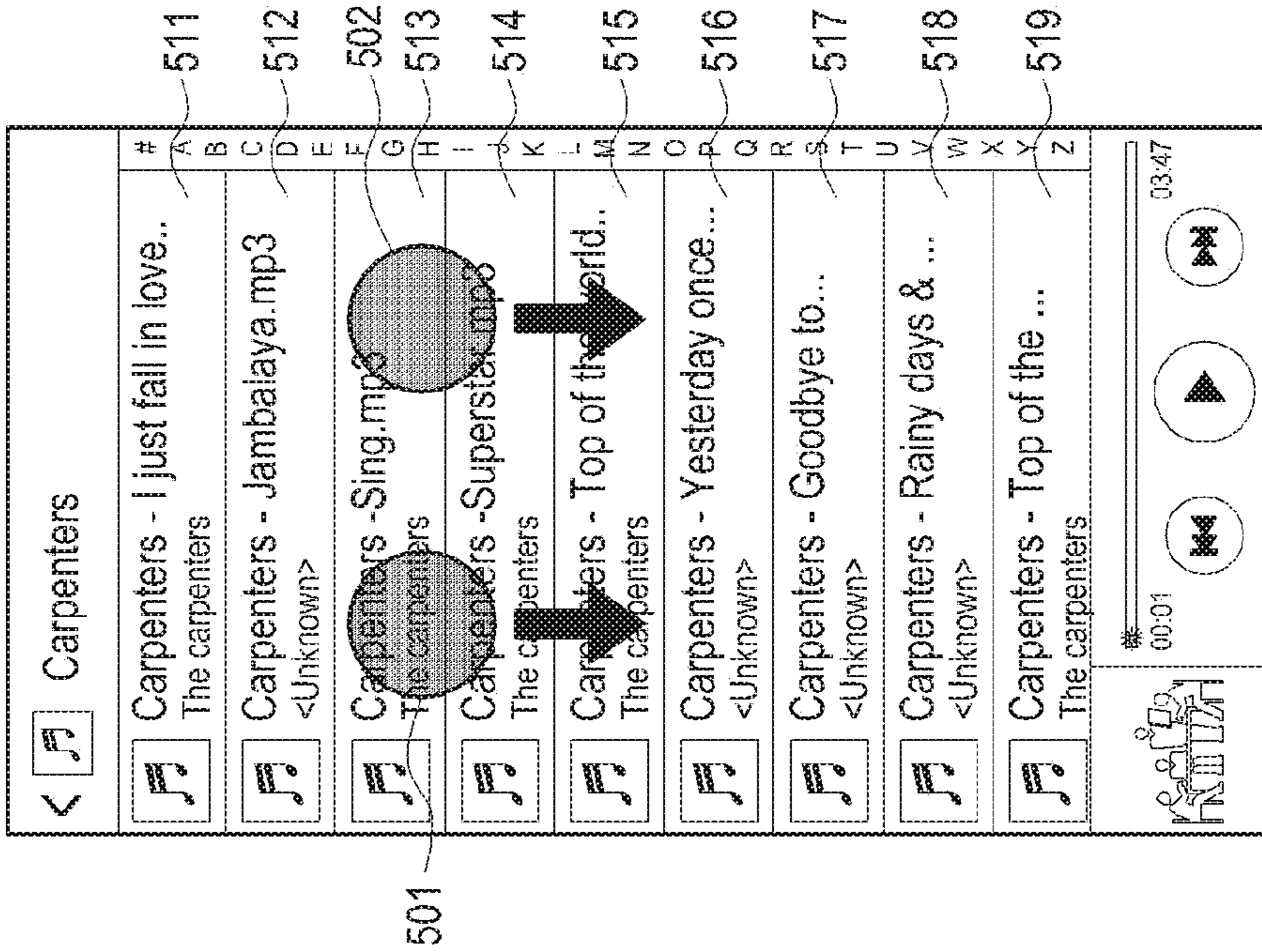


FIG. 5A

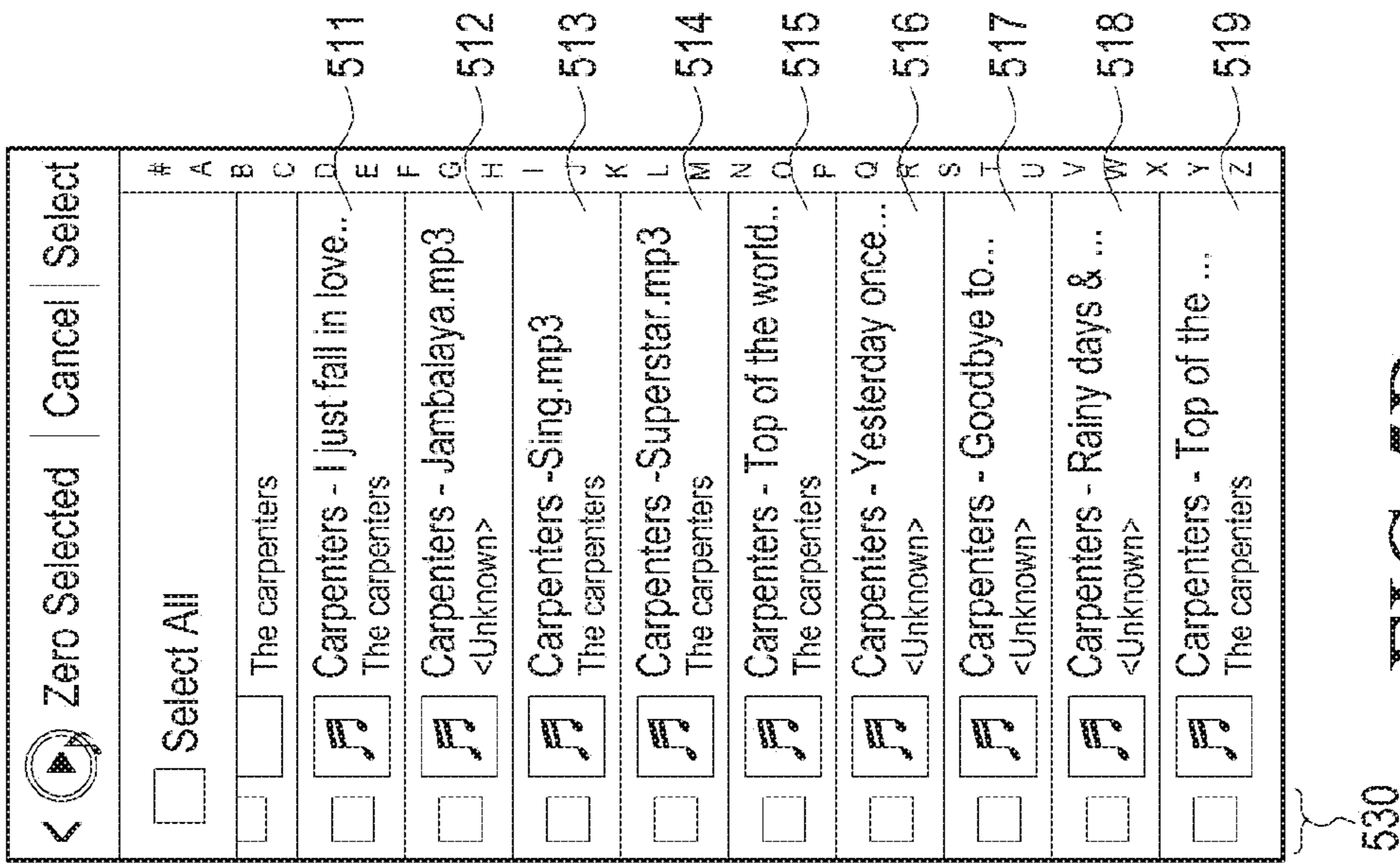


FIG. 5B

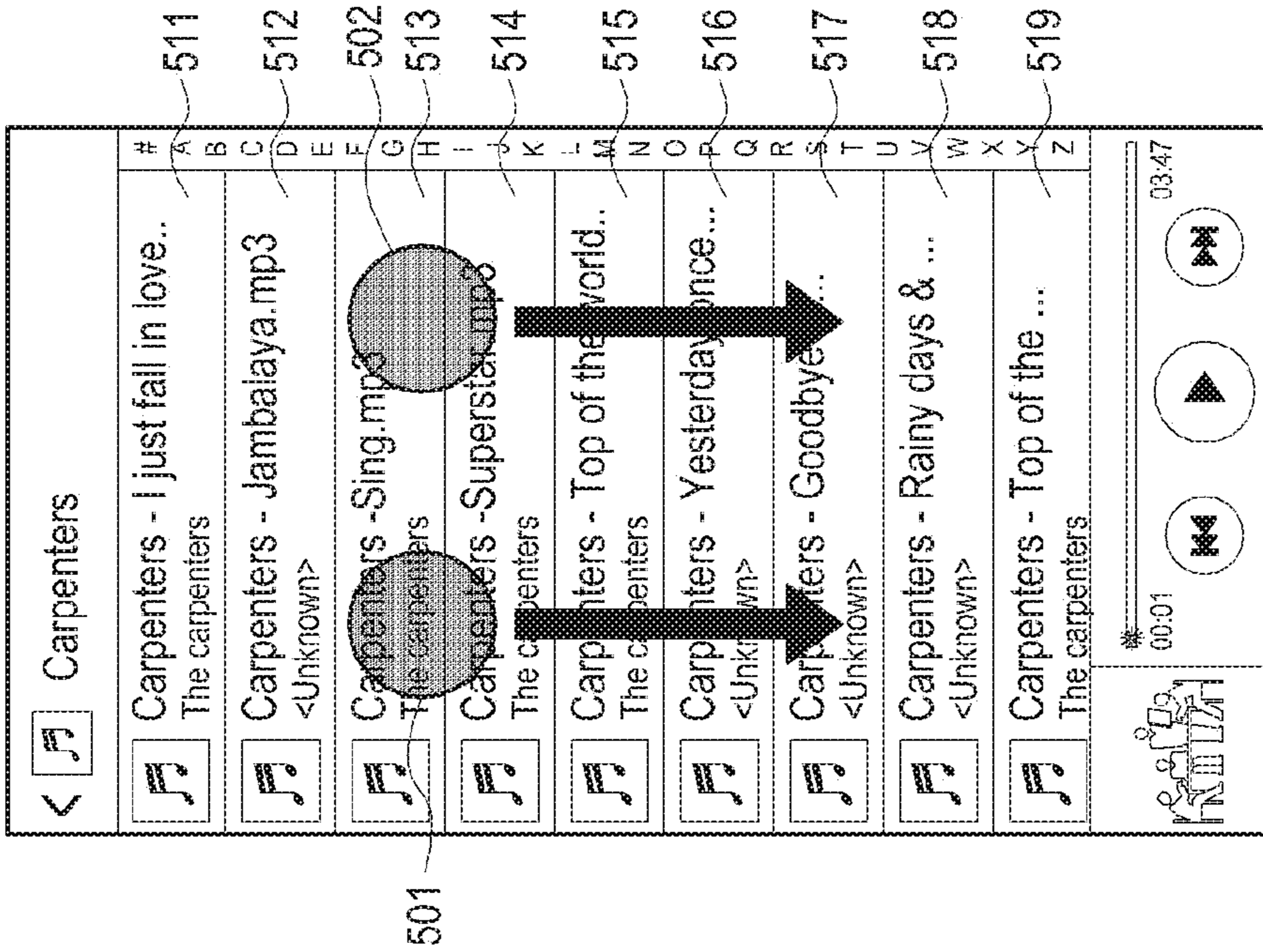


FIG. 5C

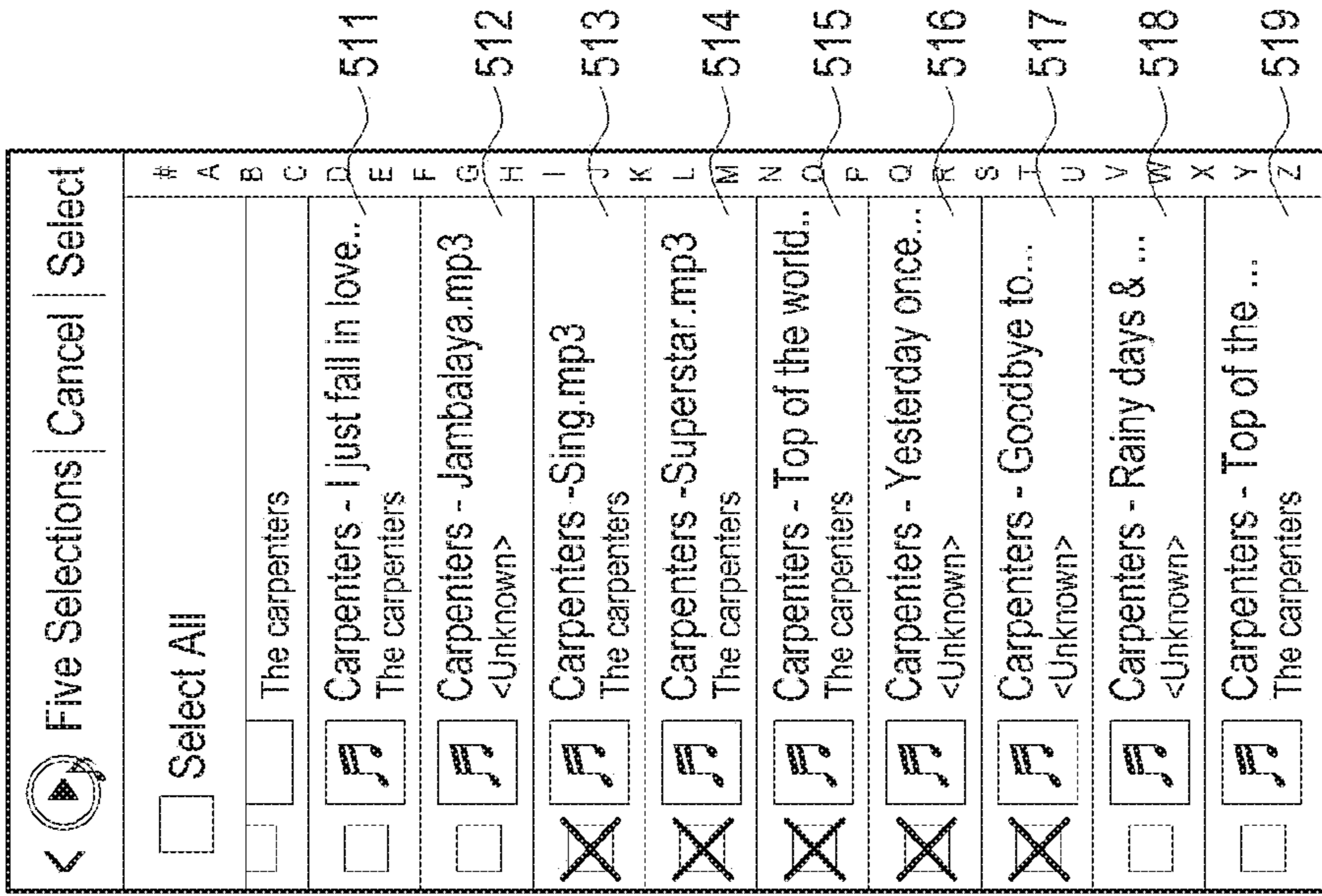


FIG. 5D

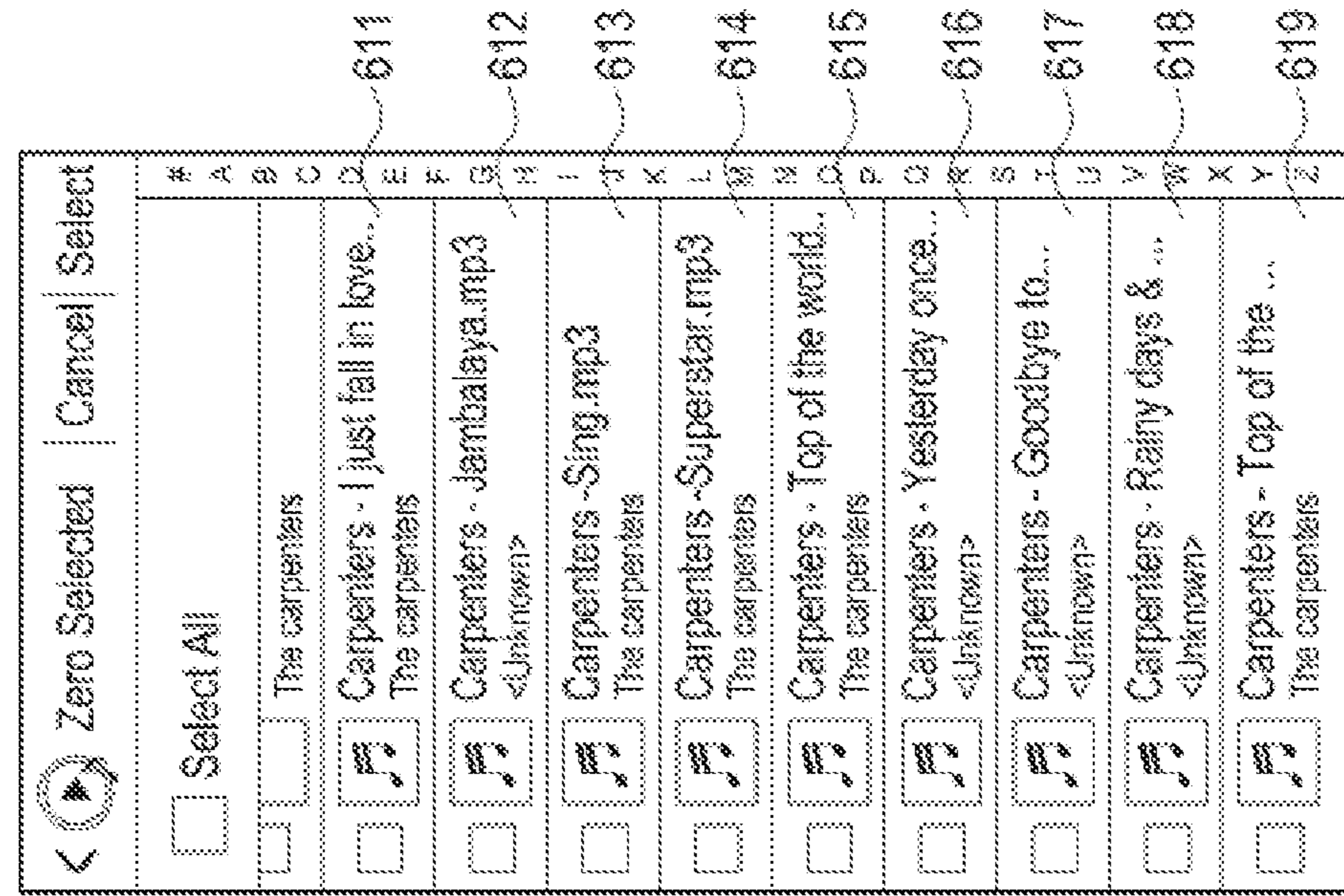


FIG. 6A

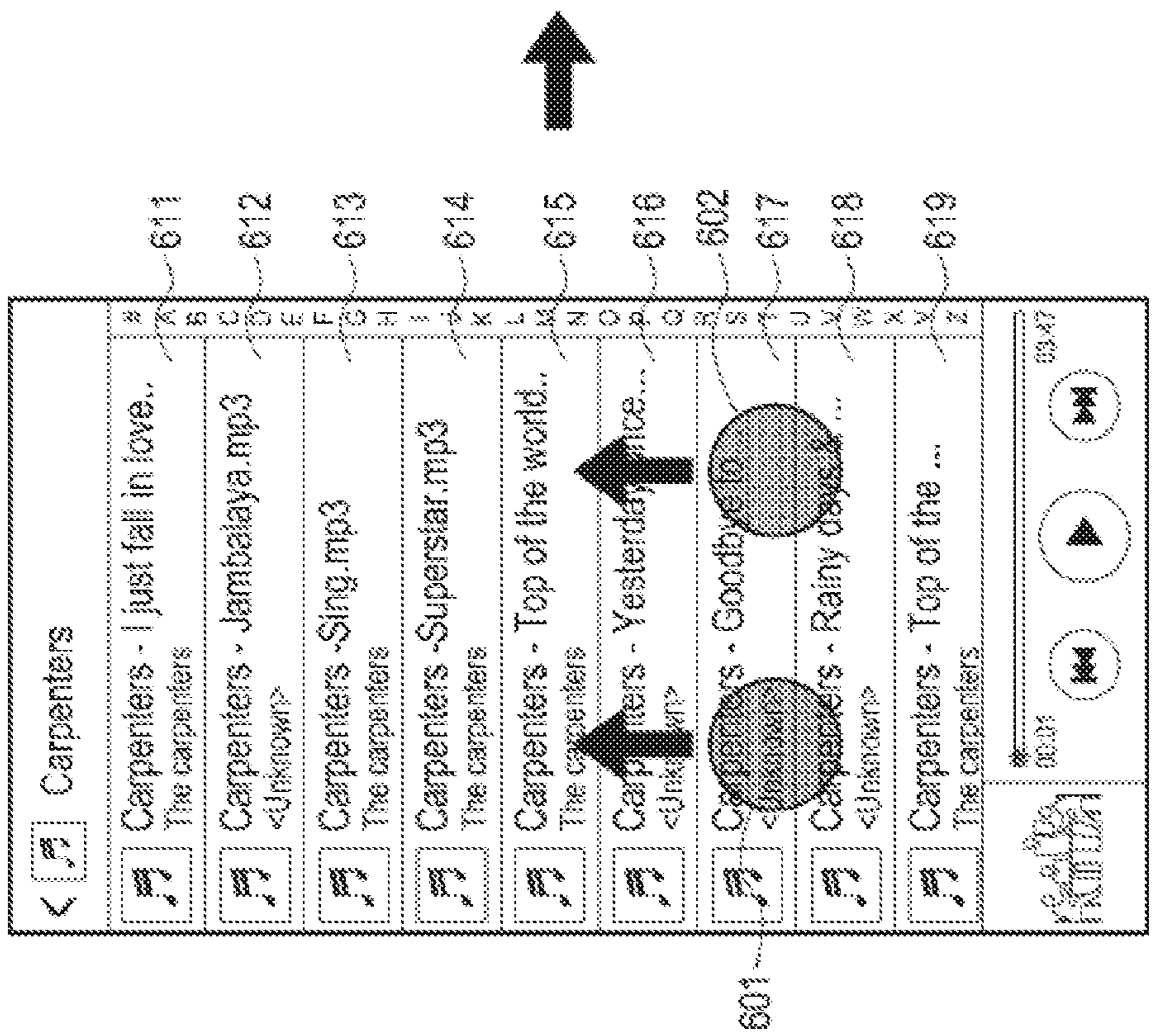


FIG. 6B

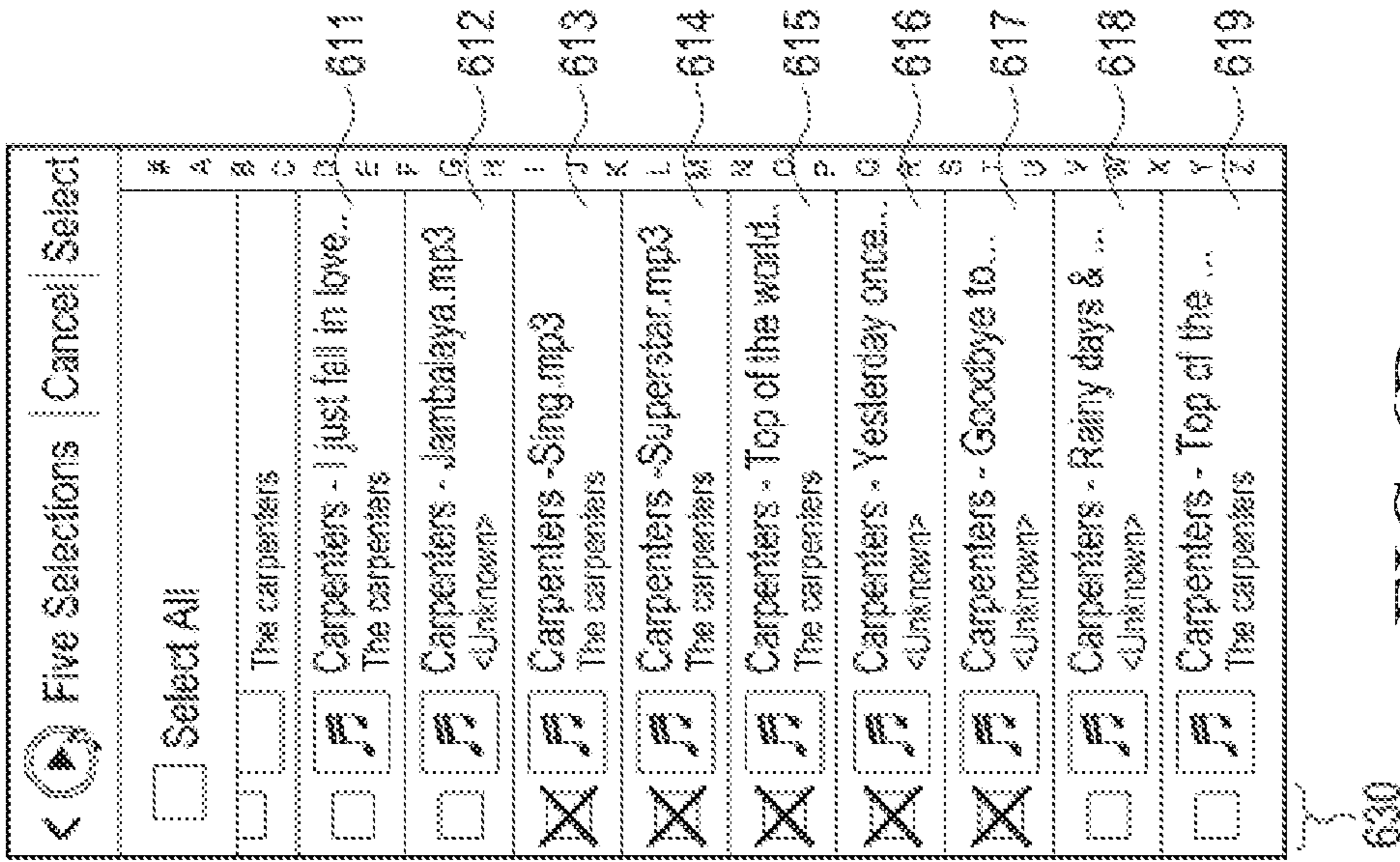


FIG.6C

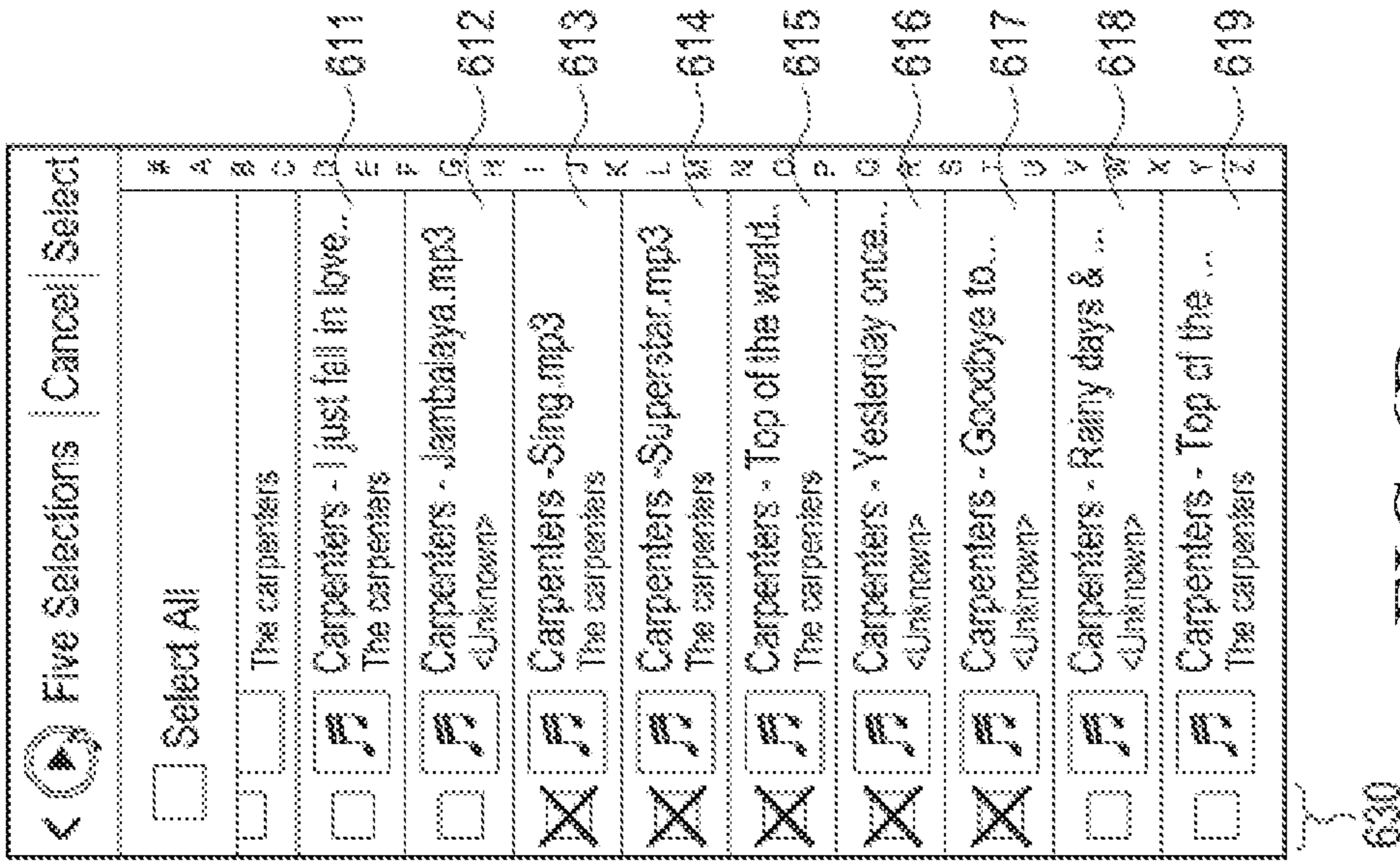


FIG.6D

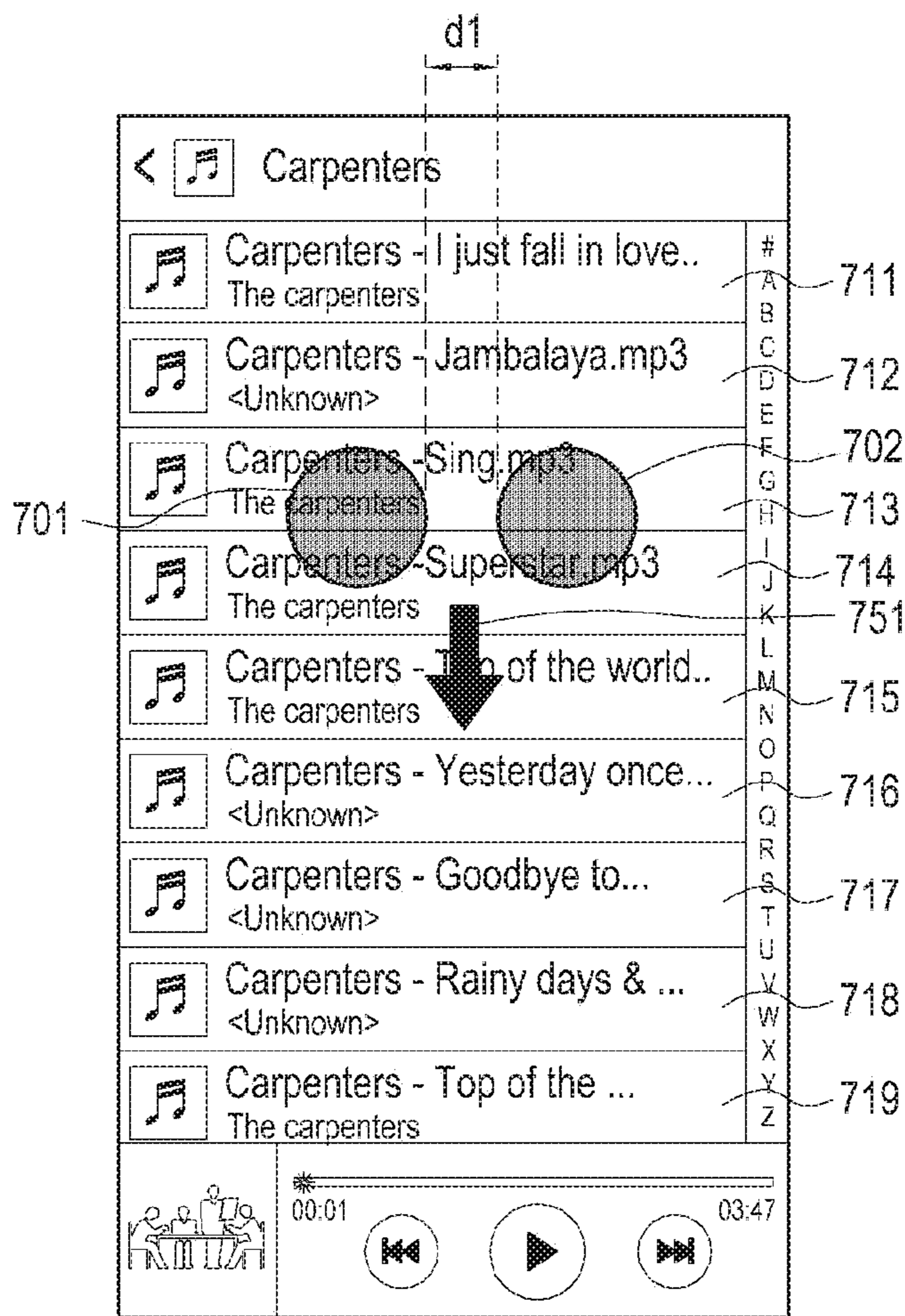


FIG.7A

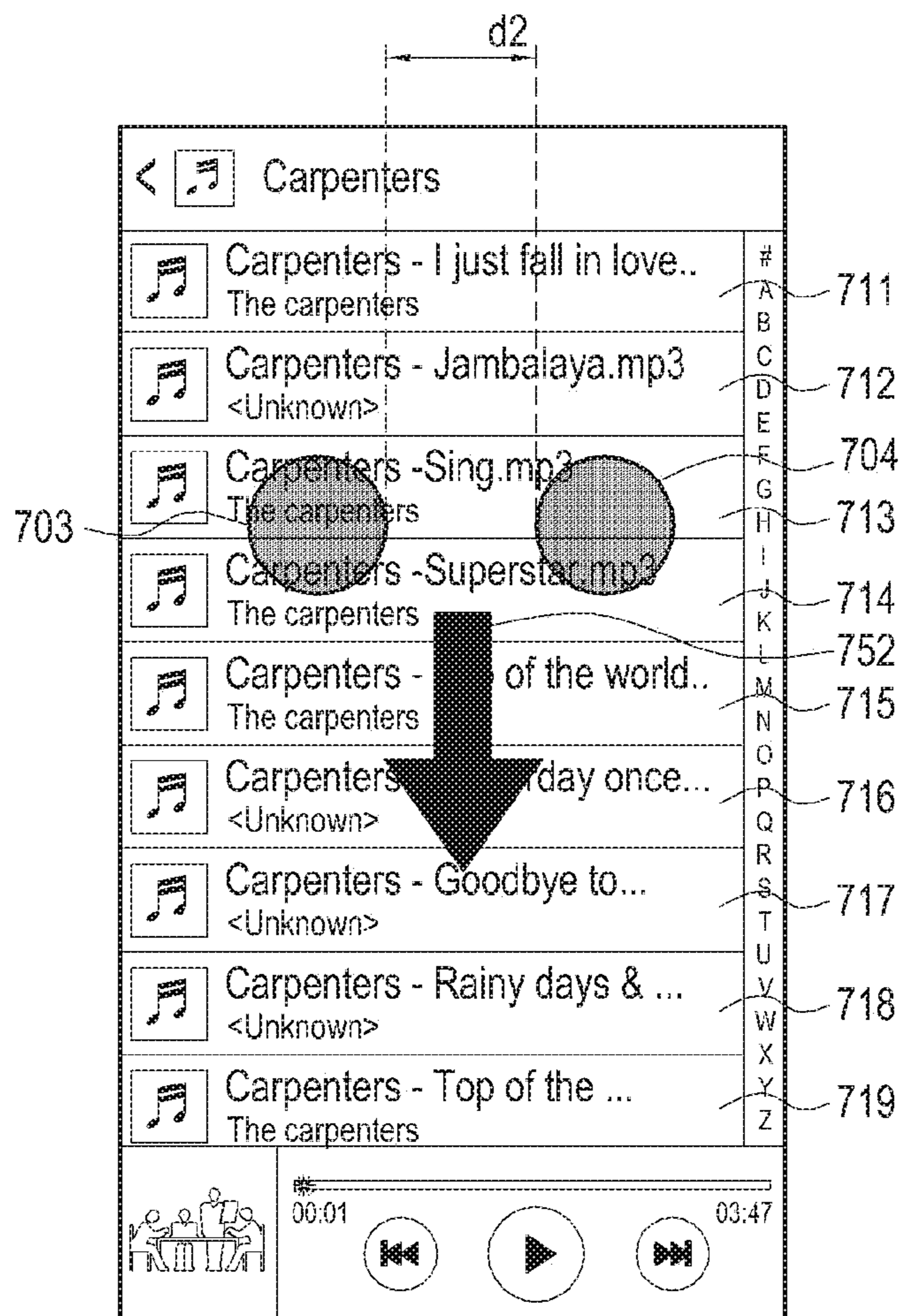


FIG. 7B

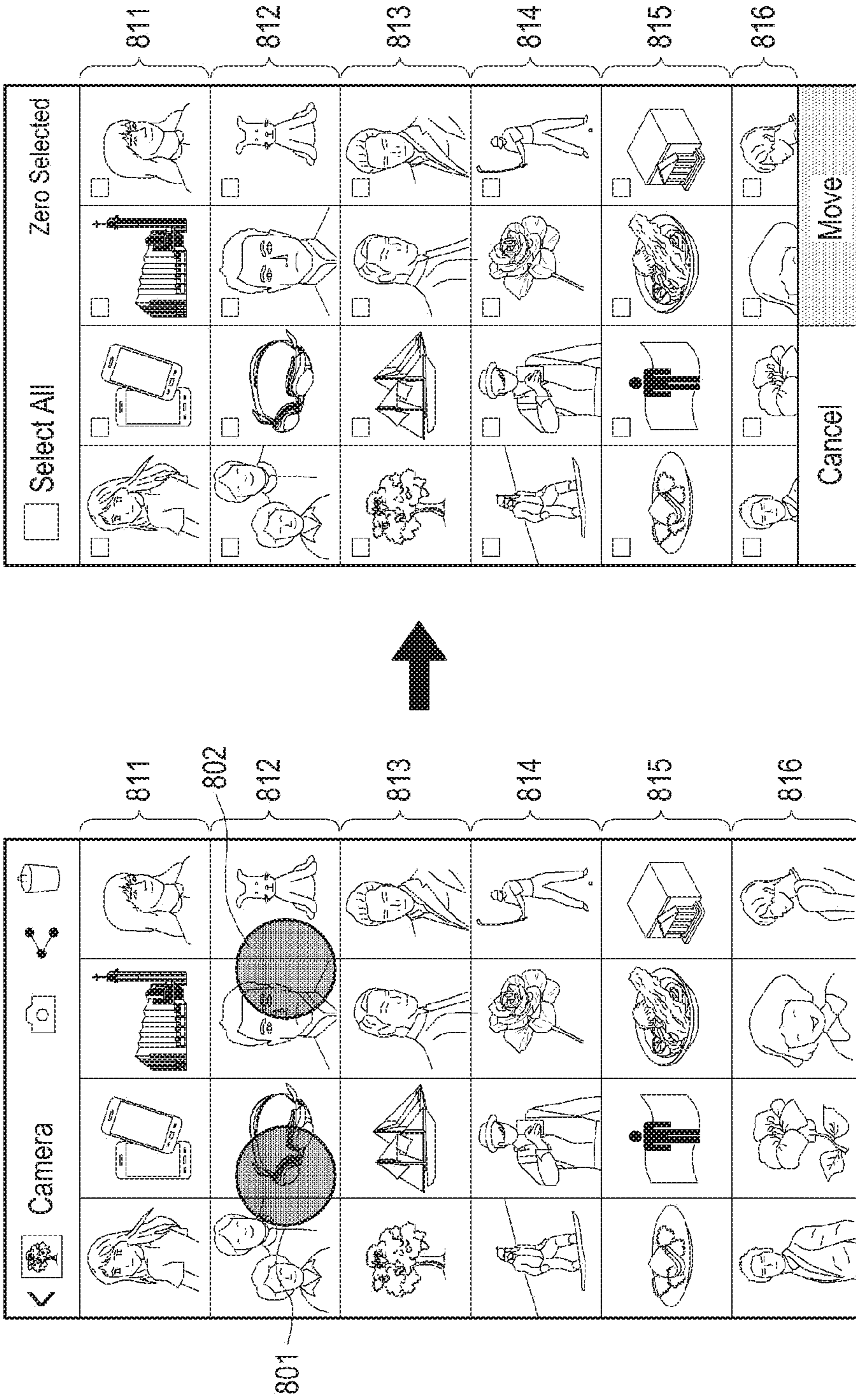


FIG. 8B

FIG. 8A

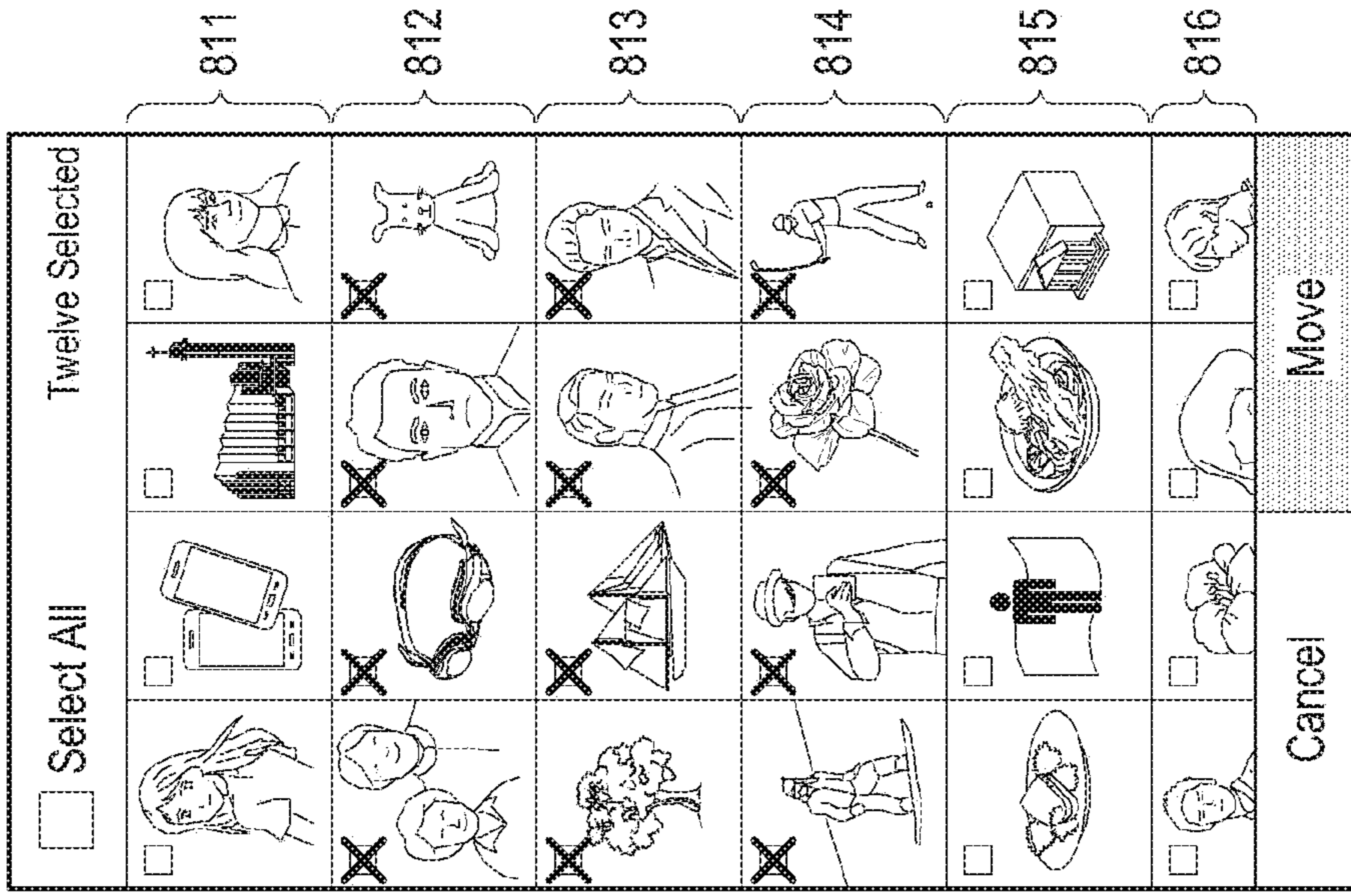


FIG. 8D

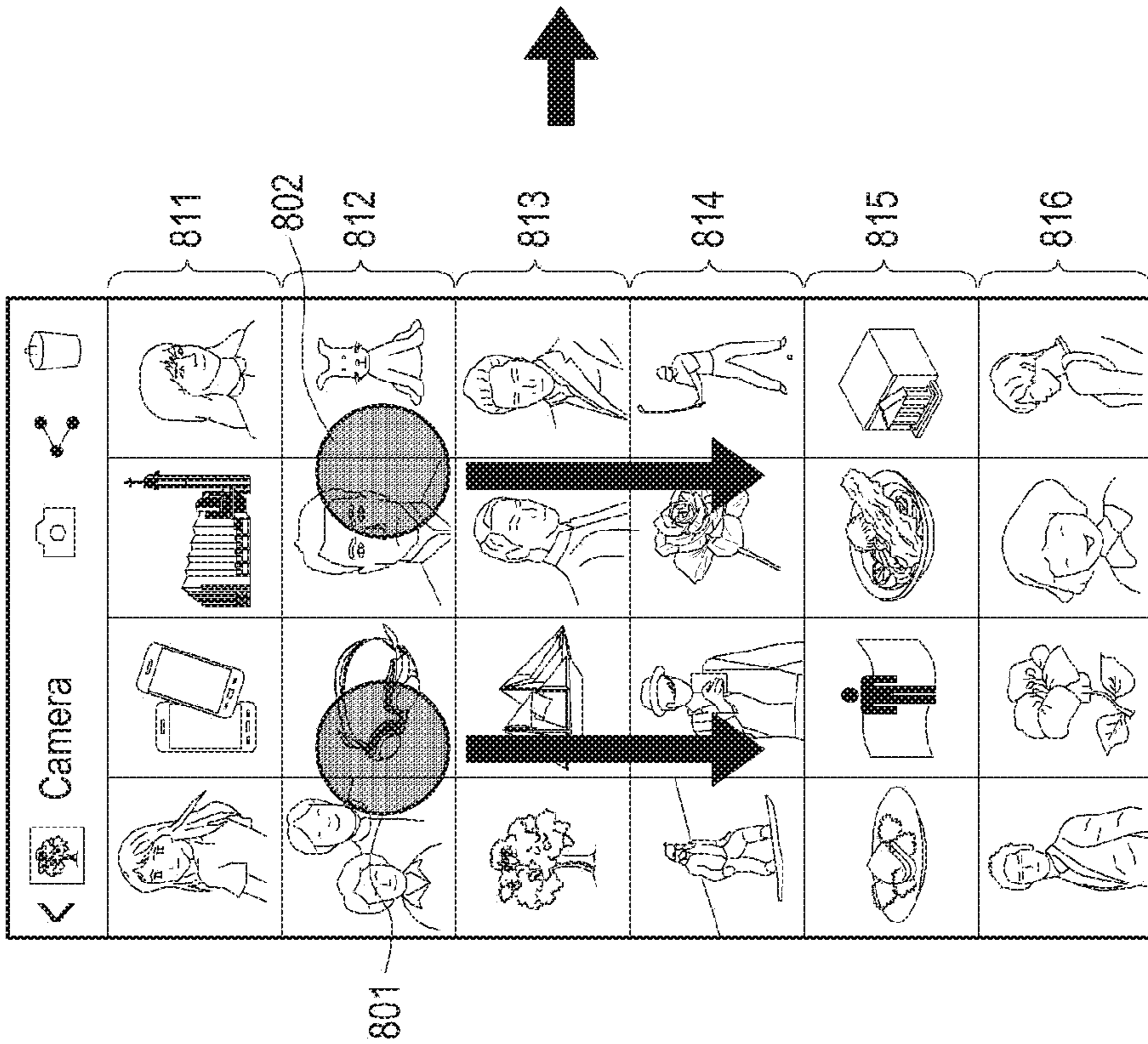


FIG. 8C

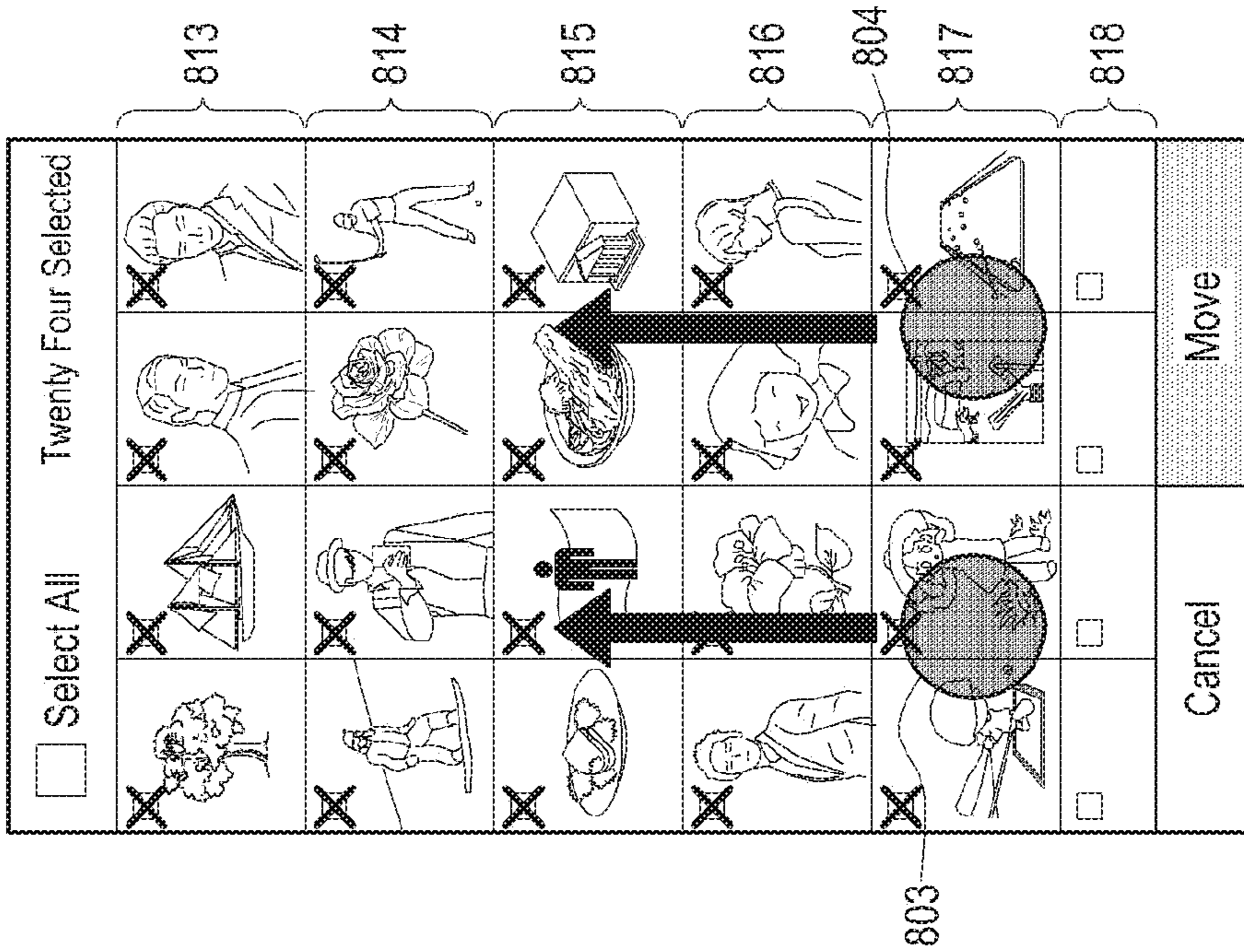
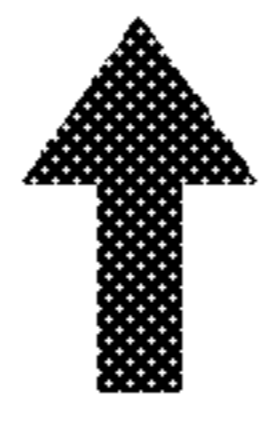
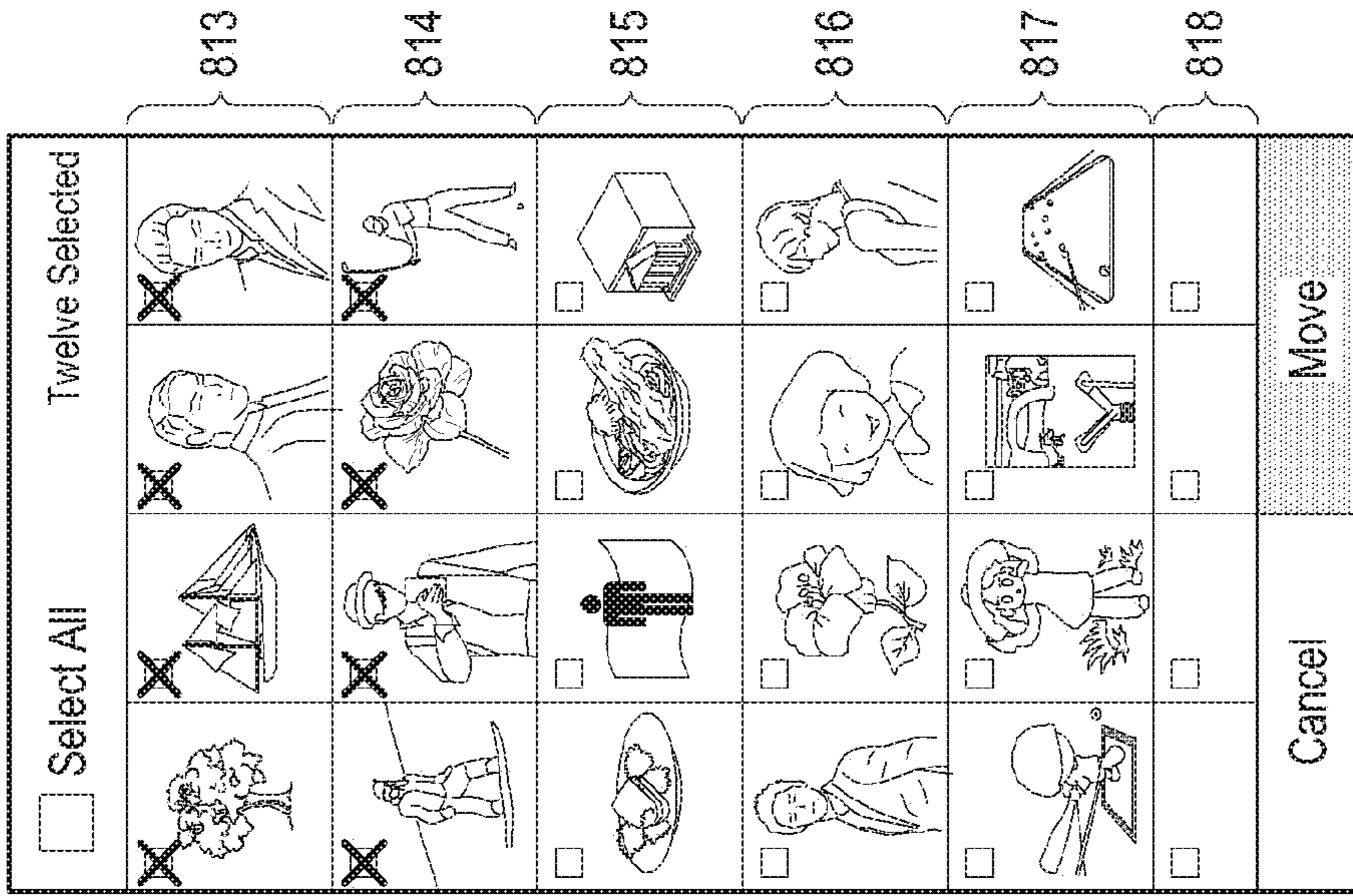


FIG. 8G

FIG. 8H

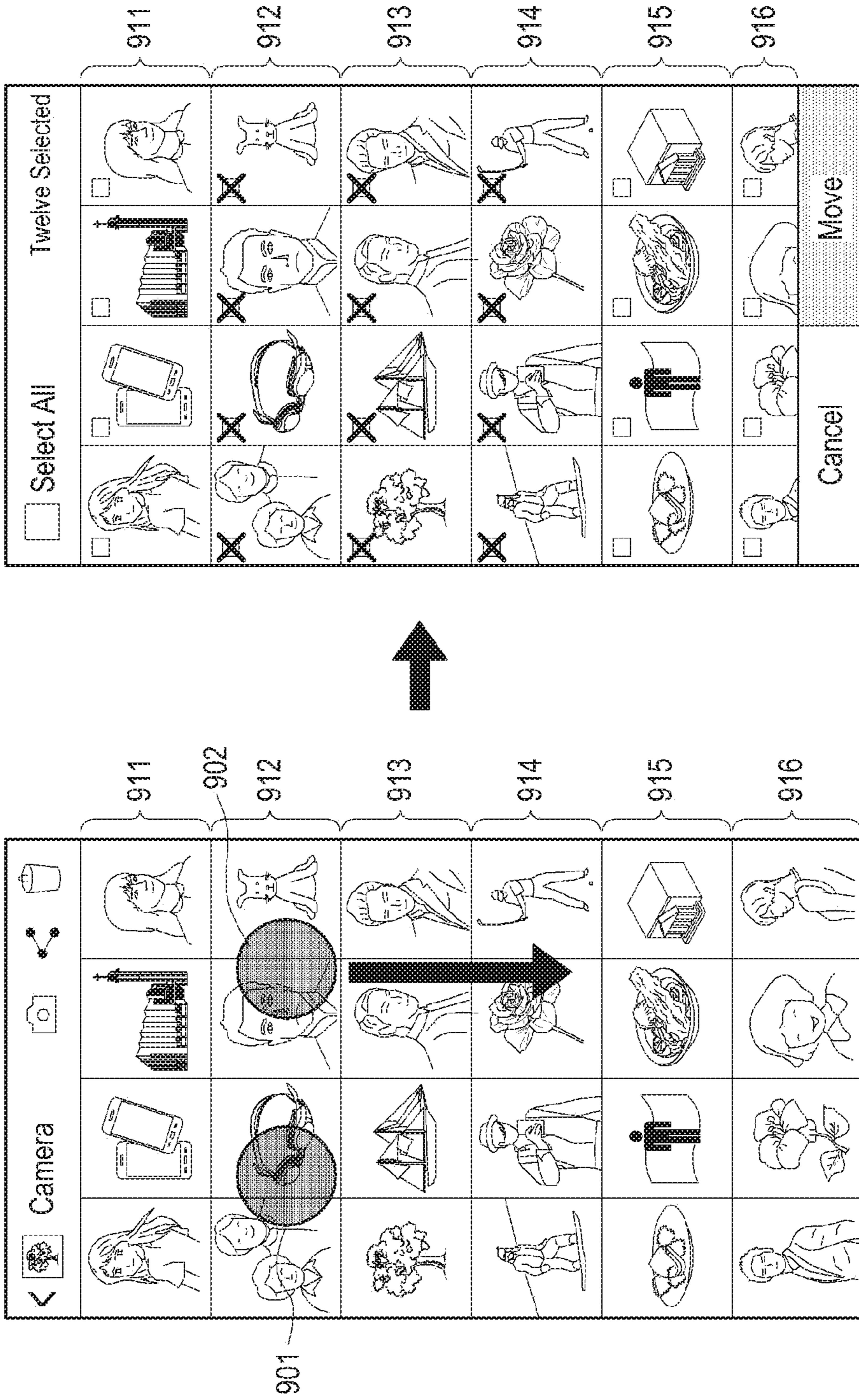


FIG. 9B

FIG. 9A

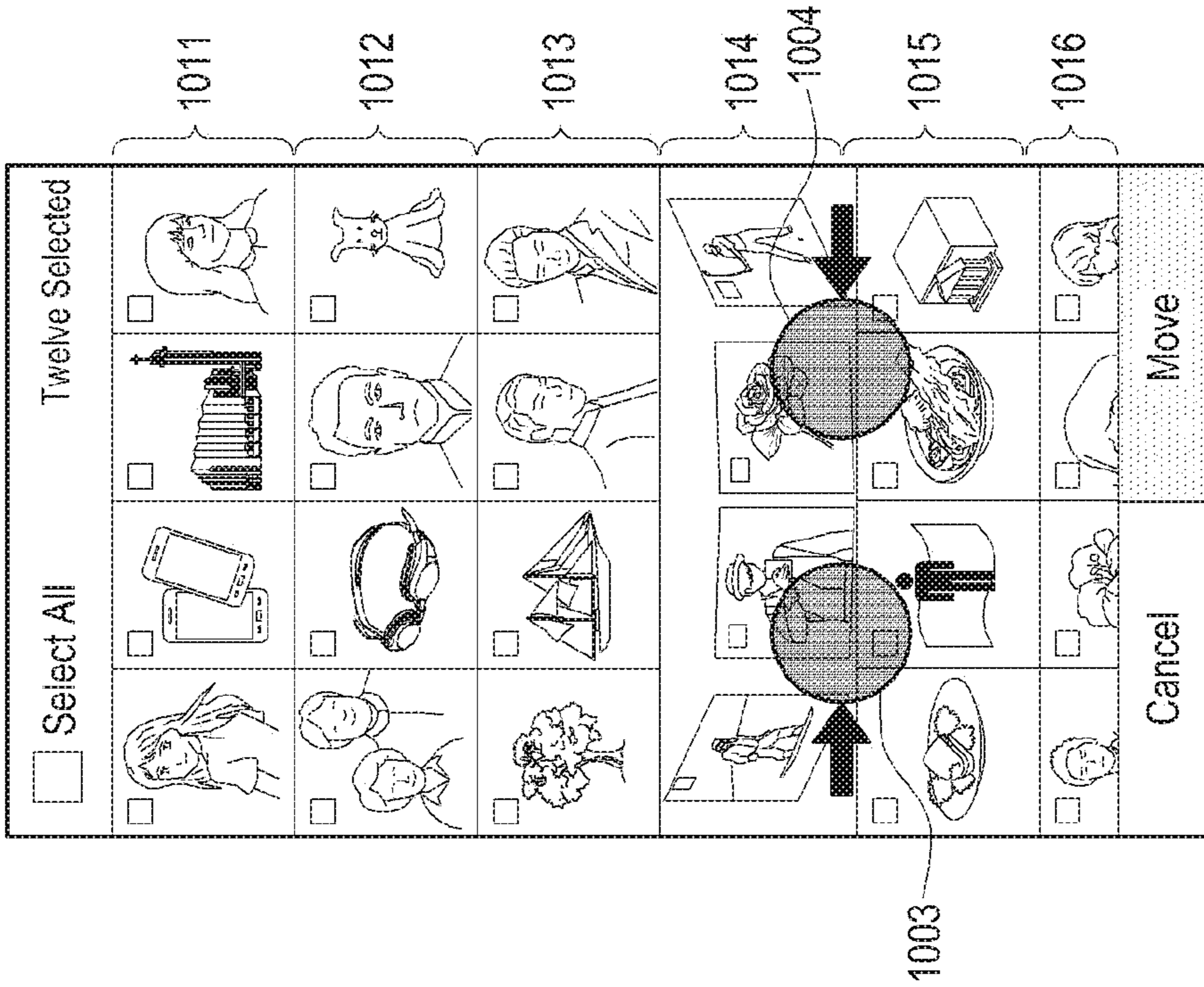


FIG. 10A

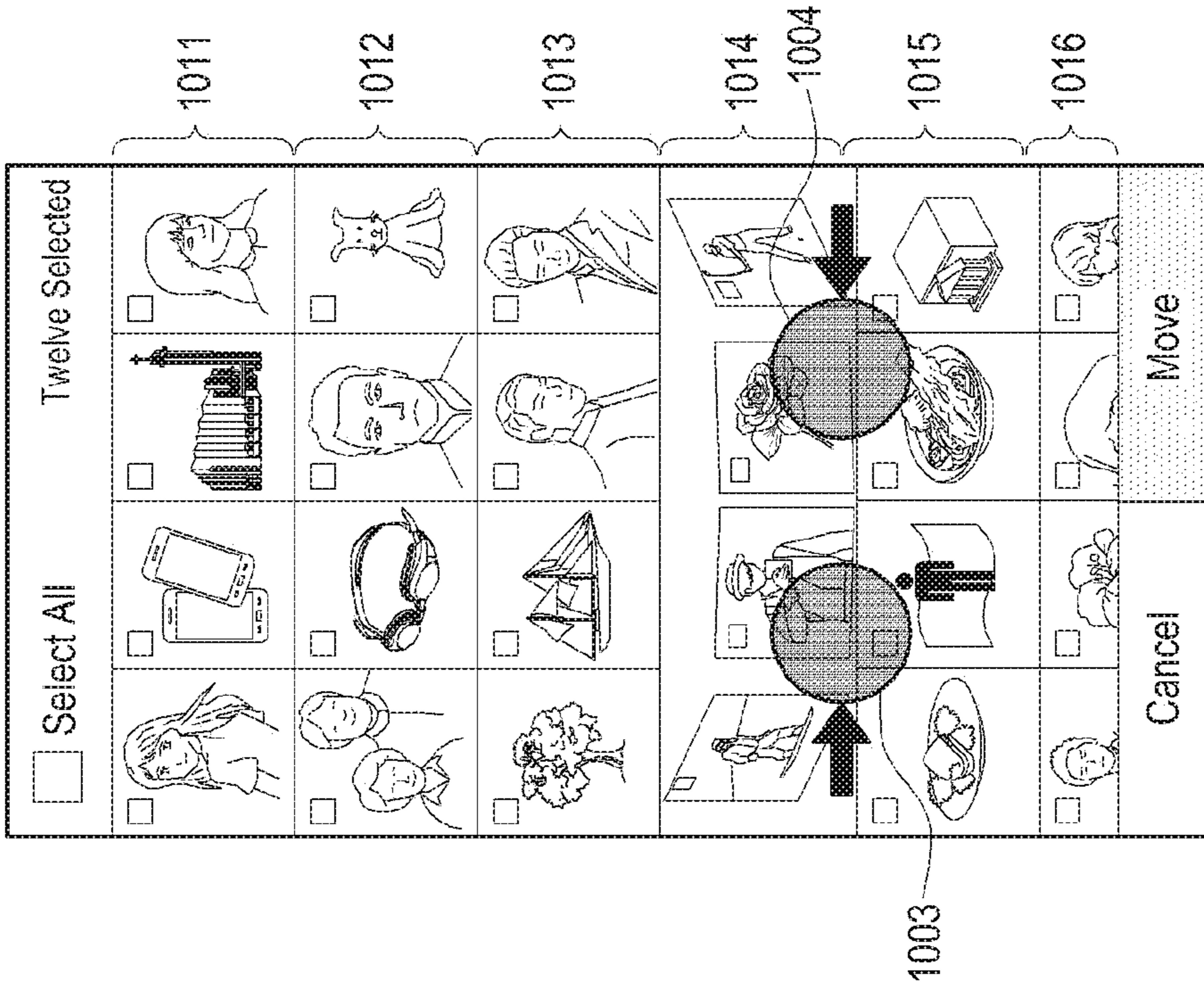


FIG. 10B

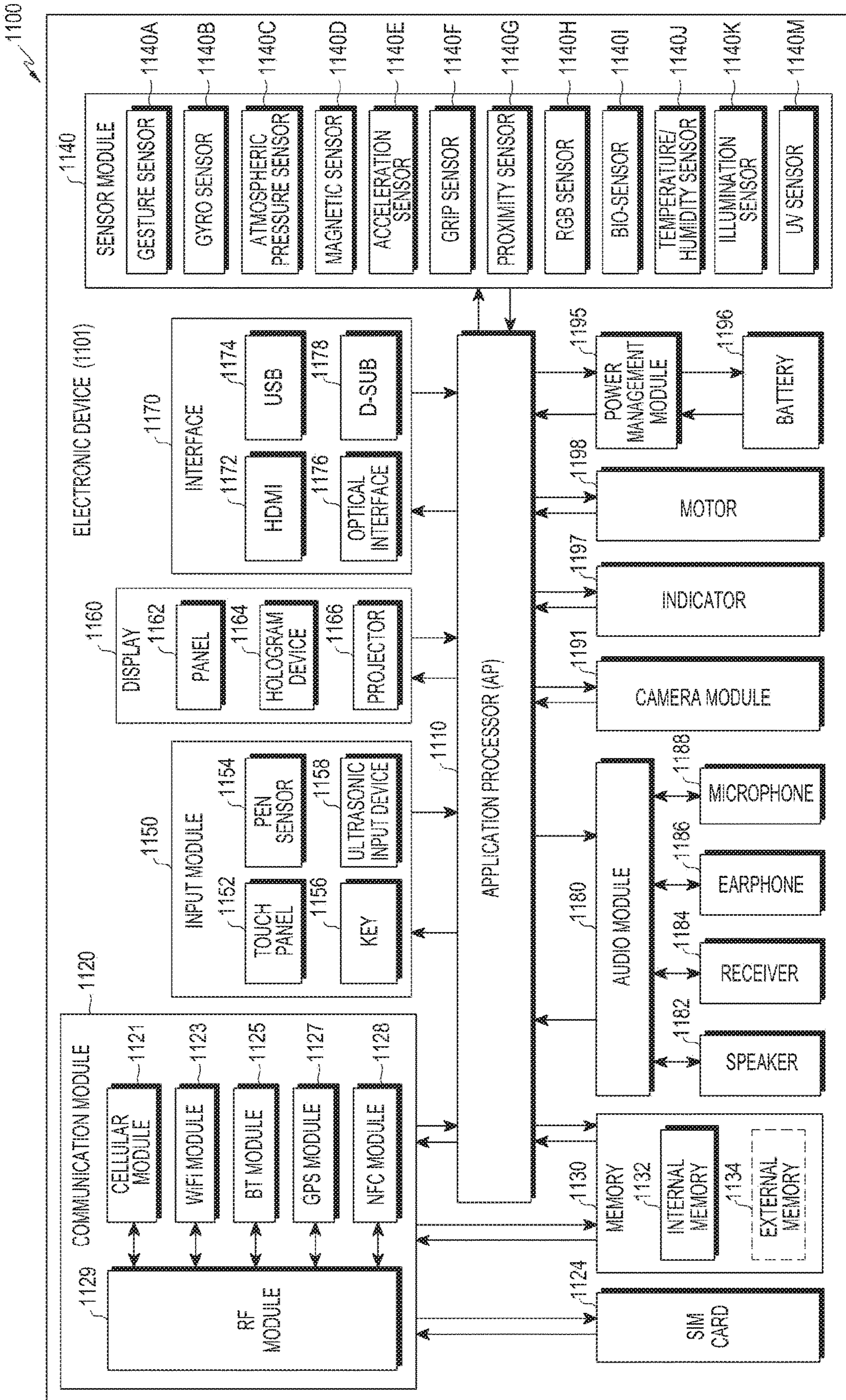


FIG. 11

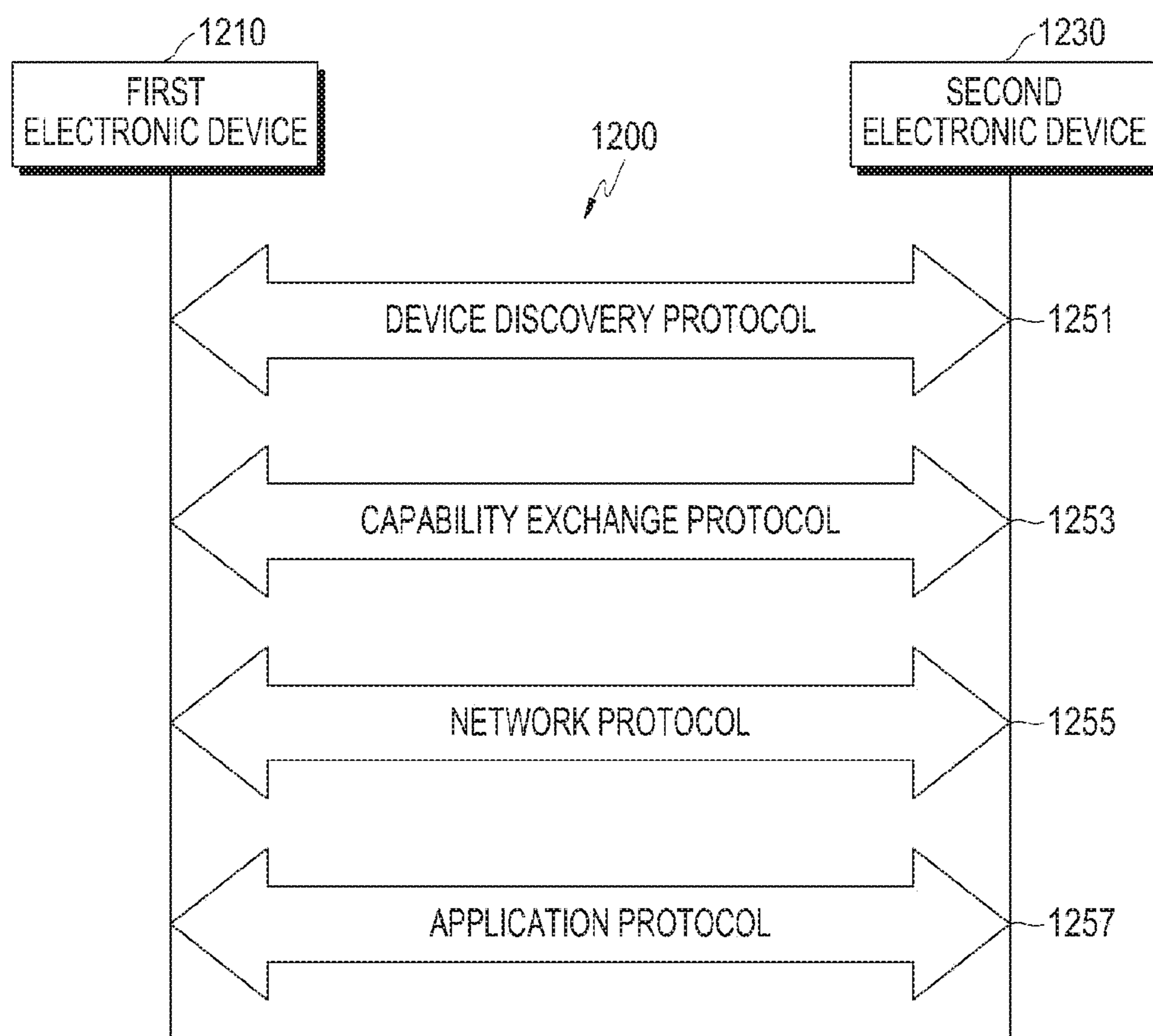


FIG. 12

**METHOD OF SELECTING ONE OR MORE
ITEMS ACCORDING TO USER INPUT AND
ELECTRONIC DEVICE THEREFOR**

PRIORITY

This application is a Continuation Application of U.S. patent application Ser. No. 14/696,026, filed on Apr. 24, 2015, and claims priority under 35 U.S.C. § 119(a) to Korean Application Serial No. 10-2014-0150264, which was filed in the Korean Intellectual Property Office on Oct. 31, 2014, the entire content of which is incorporated herein by reference.

BACKGROUND

1. Field of the Invention

The present invention relates, generally, to a method of using an electronic device, and more particularly, to a method of selecting one or more items of an electronic device according to user input.

2. Description of the Related Art

In recent years, supply and use of various portable terminals has rapidly increased with the remarkable development of information and communication technologies and semiconductor technologies. In particular, recent portable terminals have reached a mobile convergence stage of encompassing an area of other terminals without being confined to their own traditional unique areas. Mobile communication terminals now provide various additional functions, such as a TV viewing function (e.g., mobile broadcasting such as Digital Multimedia Broadcasting (DMB) or Digital Video Broadcasting (DVB)), a music reproduction function (e.g., MPEG Audio Layer-3 (MP3)), a photography function, and an Internet access function, in addition to a typical communication function, such as a voice call or message transmission/reception.

Thanks to the various additional functions, terminals provide various types of multimedia content to users so that the type of lists in the terminals is being increased. In addition, it is becoming more important to classify the content or manage the lists in using the terminals.

SUMMARY

Users may want to select two or more items in a list. Typical electronic devices, including portable terminals, support only selecting or deselecting all items. Therefore, when selecting two or more items in the list, the users have to select all desired items on a screen one by one. Therefore, a need exists for a method of selecting one or more items of an electronic device according to user input.

The present invention has been made to address at least the above mentioned problems and/or disadvantages and to provide at least the advantages described below.

Accordingly, an aspect of the present invention is to provide a method of selecting one or more items according to a user input and an electronic device therefore, in which a user can conveniently select one or more items only through simple manipulation.

According to an aspect of the present invention, a method for selecting one or more items by an electronic device is provided. The method includes receiving a first input for selecting two more points on a screen; in response to the first

input, executing a multi-selection mode for selecting one or more items; receiving a second input which is inputted in succession to the first input; and in response to the second input, selecting the one or more items.

According to an aspect of the present invention, an electronic device for selecting one or more items is provided. The electronic device includes a display configured to receive a first input on a screen; and a processor configured to: in response to the first input, execute a multi-selection mode for selecting one or more items, and if a second input which is inputted in succession to the first input is received through the display, select the one or more items in response to the second input.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other aspects, features, and advantages of the present invention will be more apparent from the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a block diagram illustrating a network environment including an electronic device, according to an embodiment of the present invention;

FIG. 2 is a block diagram of a screen control module of an electronic device, according to an embodiment of the present invention;

FIG. 3 is a flowchart illustrating a method of selecting one or more items by an electronic device, according to an embodiment of the present invention;

FIG. 4 is a flowchart illustrating a method of selecting one or more items by an electronic device, according to an embodiment of the present invention;

FIGS. 5A-5D are diagrams illustrating screens on which an electronic device executes a multi-selection mode, according to an embodiment of the present invention;

FIGS. 6A-6D are diagrams illustrating screens on which an electronic device executes a multi-selection mode, according to an embodiment of the present invention;

FIGS. 7A and 7B are diagrams illustrating screens on which an electronic device executes a multi-selection mode, according to an embodiment of the present invention;

FIGS. 8A-8H are diagrams illustrating screens on which an electronic device executes a multi-selection mode, according to an embodiment of the present invention;

FIGS. 9A and 9B are diagrams illustrating screens on which an electronic device executes a multi-selection mode, according to an embodiment of the present invention;

FIGS. 10A and 10B are diagrams illustrating screens on which an electronic device executes a multi-selection mode, according to an embodiment of the present invention;

FIG. 11 is a block diagram of an electronic device according to an embodiment of the present invention; and

FIG. 12 is a signaling diagram illustrating a communication protocol between a plurality of electronic devices, according to an embodiment of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS
OF THE PRESENT INVENTION

Hereinafter, various embodiments of the present invention will be described with reference to the accompanying drawings. The present invention may be modified in various forms and include various embodiments, but specific examples are illustrated in the drawings and described in the description. However, the description is not intended to limit the present invention to the specific embodiments, and it shall be appreciated that all the changes, equivalents and

substitutions belonging to the idea and technical scope of the present invention are included in the present invention. In the description of the drawings, identical or similar reference numerals are used to designate identical or similar elements.

Hereinafter, the terms “include” or “may include”, which may be used in various embodiments of the present invention, refer to the presence of disclosed functions, operations or elements, and do not restrict the addition of one or more functions, operations or elements. In the present disclosure, the terms such as “include” or “have” may be construed to denote a certain characteristic, number, step, operation, constituent element, component or a combination thereof, but may not be construed to exclude the existence of or a possibility of addition of one or more other characteristics, numbers, steps, operations, constituent elements, components or combinations thereof.

The term “or” in the present disclosure means the inclusion of at least one or all of the disclosed elements. For example, the expression “A or B” may include A, may include B, or may include both A and B.

“The first” or “the second” used in the present disclosure may modify various elements of embodiments, and not restrict the corresponding elements. For example, the above expressions do not limit the sequence and/or importance of the corresponding elements.

The expressions may be used to distinguish a component element from another component element. For example, a first user device and a second user device indicate different user devices although both of them are user devices. For example, without departing from the scope of the present invention, a first component element may be referred to as a second component element. Similarly, the second component element also may be referred to as the first component element.

It should be noted that if it is described that one component element is “coupled” or “connected” to another component element, the first component element may be directly coupled or connected to the second component, and a third component element may be “coupled” or “connected” between the first and second component elements. Conversely, when one component element is “directly coupled” or “directly” to another component element, it may be construed that a third component element does not exist between the first component element and the second component element.

In the present disclosure, the terms are used to describe specific embodiments, and are not intended to limit the present invention. As used herein, the singular forms are intended to include the plural forms as well, unless the context clearly indicates otherwise.

Unless defined differently, all terms used herein, which include technical terminologies or scientific terminologies, have the same meaning as understood by a person skilled in the art to which the present invention belongs. Such terms as those defined in a generally used dictionary are to be interpreted to have the meanings equal to the contextual meanings in the relevant field of art, and are not to be interpreted to have ideal or excessively formal meanings unless clearly defined in the present disclosure.

An electronic device according to embodiments of the present invention may be a device with a display function or a communication function. For example, the electronic devices may include at least one of smart phones, tablet personal computers (PCs), mobile phones, video phones, e-book readers, desktop PCs, laptop PCs, netbook computers, personal digital assistants (PDAs), portable multimedia players (PMPs), MP3 players, mobile medical devices,

cameras, wearable devices (e.g., head-mounted-devices (HMDs) such as electronic glasses), electronic clothes, electronic bracelets, electronic necklaces, electronic accessories, electronic tattoos, or smart watches.

The electronic device may be a smart home appliance with a display function or a communication function. The smart home appliances may include at least one of, for example, televisions, digital video disk (DVD) players, audio players, refrigerators, air conditioners, cleaners, ovens, microwaves, washing machines, air purifiers, set-top boxes, TV boxes (e.g., HomeSync™ of Samsung, Apple TV™, or Google TV™), game consoles, electronic dictionaries, electronic keys, camcorders, or electronic frames.

The electronic device may include at least one of various medical devices such as a magnetic resonance angiography (MRA) scanner, a magnetic resonance imaging (MRI) scanner, a computed tomography (CT) scanner, a scanner, an ultrasonograph, or the like, a navigation device, a Global Positioning System (GPS) receiver, an Event Data Recorder (EDR), a Flight Data Recorder (FDR), a vehicle infotainment device, an electronic equipment for ship (for example a ship navigation device and gyro-compass and the like, avionics, a security device, a head unit for vehicle, an industrial or household robot, ATM (automatic teller machine) in banking facilities or POS (point of sales) in stores.

The electronic device may include at least one of a part of furniture or a building/structure having a display control function, an electronic board, an electronic signature receiving device, a projector, and various kinds of measuring instruments (e.g., a water meter, an electric meter, a gas meter, a radio wave meter, and the like). The electronic device may be a combination of one or more of above described various devices. Also, the electronic device may be a flexible device. Also, the electronic device is not limited to the above described devices.

Hereinafter, the electronic device will be described with reference to the accompanying drawings. In various embodiments, the term “user” may indicate a person using an electronic device or a device (e.g. an artificial intelligence electronic device) using an electronic device.

FIG. 1 is a block diagram illustrating a network environment including an electronic device, according to an embodiment of the present invention.

Referring to FIG. 1, the electronic device 101 includes a bus 110, a processor 120, a memory 130, an input/output interface 140, a display 150, a communication interface 160, and a screen control module 170.

The bus 110 may be a circuit for connecting the aforementioned elements with each other and transferring communication (e.g., a control messages) among the aforementioned elements.

The processor 120 receives instructions from the aforementioned other elements (e.g., the memory 130, the input/output interface 140, the display 150, the communication interface 160, and the screen control module 170) through, for example, the bus 110, decodes the received instructions, and performs calculation or data processing according to the decoded instructions.

The memory 130 stores instructions or data received from or generated by the processor 120 or the other elements (e.g., the input/output interface 140, the display 150, the communication interface 160, and the screen control module 170). The memory 130 includes programming modules such as a kernel 131, a middleware 132, an Application Programming Interface (API) 133, and applications 134. Each of the

aforementioned programming modules may be formed of software, firmware, hardware, or a combination of at least two thereof.

The memory **130** stores items displayed through the display **150** (e.g., icons corresponding to applications and images or icons corresponding thereto).

The kernel **131** controls or manages system resources (e.g., the bus **110**, the processor **120**, and the memory **130**) which are used to perform operations or functions implemented by the rest of the programming modules, for example, the middleware **132**, the API **133** or the applications **134**. In addition, the kernel **131** may provide an interface through which the middleware **132**, the API **133**, or the applications **134** may access the individual elements of the electronic device **101** to control or manage them.

The middleware **132** serves as an intermediary such that the API **133** or the applications **134** communicate with the kernel **131** to transfer data. Furthermore, in response to requests for work received from the applications **134**, the middleware **132** performs a control (e.g., scheduling or load-balancing) for the work requests, using a method of assigning priorities for use of a system resource (e.g., the bus **110**, the processor **120**, or the memory **130**) of the electronic device **101** to at least one of the applications **134**.

The API **133** is an interface by which the applications **134** control functions provided from the kernel **131** or the middleware **132** and for example, may include at least one interface or function (e.g., instruction) for file control, window control, image processing, text control, or the like.

The applications **134** may include a Short Message Service (SMS)/Multimedia Message Service (MMS) application, an e-mail application, a calendar application, an alarm application, a health care application (e.g., an application for measuring a work rate or a blood sugar), and an environment information application (e.g., an application for providing atmospheric pressure, humidity, or temperature information). Additionally or alternatively, the applications **134** may be an application related to an exchange of information between the electronic device **101** and an external electronic device (e.g., an electronic device **104**). The application related to information exchange may include, for example, a notification relay application for transferring particular information to the external electronic device or a device management application for managing the external electronic device.

For example, the notification relay application may include a function of transferring notification information generated in the other applications (e.g., the SMS/MMS application, the e-mail application, the health care application, or the environmental information application) of the electronic device **101** to the external electronic device (for example, the electronic device **104**). Additionally or alternatively, the notification relay application may receive notification information from, for example, the external electronic device (e.g., the electronic device **104**) and provide the same to a user. For example, the device management application may manage (e.g., install, delete, or update) at least some functions (e.g., turning the external electronic device (or some elements) on/off or adjusting the brightness (or resolution) of a display) of the external electronic device (e.g., the electronic device **104**) that communicates with the electronic device **101**, applications performed in the external electronic device, or services (e.g., a phone call service or a messaging service) provided by the external electronic device.

The applications **134** may include applications designated depending upon attributes (e.g., the type of electronic

device) of the external electronic device (e.g., the electronic device **104**). For example, in a case where the external electronic device is an MP3 player, the applications **134** may include an application related to reproduction of music. Similarly, when the external electronic device is a mobile medical device, the application **134** may include an application related to health care. The applications **134** may include at least one of the applications designated in the electronic device **101** or applications received from the external electronic device (e.g., a server **106** or the electronic device **104**).

The input/output interface **140** transfers instructions or data, input by a user through an input/output device (e.g., a sensor, a keyboard, or a touch screen), to the processor **120**, the memory **130**, the communication interface **160**, or the screen control module **170** through, for example, the bus **110**. For example, the input/output interface **140** provides, to the processor **120**, data for a user's touch input through the touch screen. In addition, the input/output interface **140** outputs, through the input/output device (e.g., a speaker or a display), the instructions or data received from the processor **120**, the memory **130**, the communication interface **160**, or the display control module **170** through the bus **110**. For example, the input/output interface **140** outputs voice data processed by the processor **120** to a user through the speaker.

The input/output interface **140** receives a user input for executing a multi-selection mode or a user input for selecting one or more items. For example, through the microphone included in the input/output interface **140**, a user may input voice as the user input for executing a multi-selection mode or the user input for selecting one or more items. In addition, through the microphone included in the input/output interface **140**, the user may press a button provided in the electronic device **101** or one or more buttons included in the keypad as the user input for executing a multi-selection mode or the user input for selecting one or more items. The keypad may include a virtual keypad. In this case, through a camera lens included in the input/output interface **140**, the user may also input a gesture as the user input for executing a multi-selection mode or the user input for selecting one or more items.

The display **150** displays various pieces of information (e.g., multimedia data or text data) for a user. The display **150** displays one or more items. In addition, the display unit **150** displays a multi-selection screen when the electronic device **101** is switched to the multi-selection mode. A user may select one or more items through the multi-selection screen.

The one or more items and a selection box for representing whether the corresponding item is selected may be displayed on the multi-selection screen.

The communication interface **160** connects communication between the electronic device **101** and the external device (e.g., the electronic device **104** or the server **106**). For example, the communication interface **160** communicates with the external electronic device while being connected to a network **162** through wireless or wired communication. The wireless communication may include at least one of, for example, Wireless Fidelity (Wi-Fi), Bluetooth® (BT), Near Field Communication (NFC), Global Positioning System (GPS), and cellular communication (e.g., LTE, LTE-A, CDMA, WCDMA, UMTS, WiBro, or GSM).

The wired communication may include at least one of, for example, a Universal Serial Bus (USB), a High Definition Multimedia Interface (HDMI), Recommended Standard 232 (RS-232), and a Plain Old Telephone Service (POTS).

The network **162** may be a telecommunication network. The communication network may include at least one of a computer network, the Internet, the Internet of Things, and a telephone network. A protocol (e.g., a transport layer protocol, a data link layer protocol, or a physical layer protocol) for communication between the electronic device **101** and the external device may be supported by at least one of the applications **134**, the application programming interface **133**, the middleware **132**, the kernel **131**, and the communication interface **160**.

The screen control module **170** processes at least some information acquired from the other elements (e.g., the processor **120**, the memory **130**, the input/output interface **140**, and the communication interface **160**) and provides the processed information to a user through various methods. For example, using the processor **120** or independently therefrom, the screen control module **170** controls at least some functions of the electronic device **101** such that the electronic device **101** may interwork with the other electronic devices (e.g., the electronic device **104** or the server **106**). Additional information on the display control module **170** will be described in conjunction with FIG. **210B**, descriptions of which will be given below.

The screen control module **170** executes the multi-selection mode. As described above, the multi-selection mode is an operating mode in which a user selects one or more items displayed on the display **150**. The screen control module **170** determines whether a user input for executing the multi-selection mode has been received and executes the multi-selection mode when it is determined that the user input for executing the multi-selection mode has been received.

When the multi-selection mode is executed, the screen control module **170** determines items selected, depending upon the user input. In this case, the user input may be continuously input for selecting a plurality of items at one time. The screen control module **170** determines items selected depending upon the continuous user input and displays the one or more selected items on a screen through the display **150**.

FIG. **2** is a block diagram of the screen control module **170** of the electronic device **101**, according to an embodiment of the present invention.

Referring to FIG. **2**, the screen control module **170** includes at least one of a selection module **210** and a processing module **220**.

When a multi-selection mode is executed, the selection module **210** determines one or more items selected depending upon a continuous user input.

The processing module **220** processes the one or more items selected depending upon the user input. For example, the processing module **220** copies or deletes the items. In addition, the processing module **220** controls the display **150** to display, on a screen, the operation of processing the items. For example, the processing module **220** controls the display **150** to display the operation of copying or deleting the items.

According to an aspect of the present invention, an electronic device for selecting one or more items includes a display configured to receive a first input on a screen; and a processor configured to: in response to the first input, execute a multi-selection mode for selecting one or more items, and if a second input which is inputted in succession to the first input is received through the display, select the one or more items in response to the second input.

FIG. **3** is a flowchart illustrating a method of selecting one or more items by an electronic device (e.g., the electronic device **101**), according to an embodiment of the present invention.

Referring to FIG. **3**, the electronic device **101** receives a first input from a user through the display **150** at step **S302**. The first input, which may be a user input for executing a multi-selection mode, may be a continuous motion input by the user.

When receiving the first input, the screen control module **170** controls the display **150** to display a multi-selection screen in response to the first input at step **S304**. The multi-selection screen is a screen for allowing the user to select one or more items displayed thereon. For example, on the multi-selection screen, a selection box corresponding to each of the items may be displayed on the left or right side of the item or on the item. As the multi-selection screen is displayed as described above, the user can intuitively recognize that the display **150** has been switched to the multi-selection screen for selecting one or more items.

The electronic device **101** receives a second input, subsequent to the first input, from the user at step **S306**. The second input may be a continuous user input following the first input. For example, if the first input is a user input for selecting an arbitrary point on a screen, the second input may be a scroll input for moving the screen upwards or downwards with respect to the arbitrary point.

The screen control module **170** determines one or more items selected depending upon the second input at step **S308**. The screen control module **170** determines the items selected depending upon the second input in consideration of coordinates of the second input on the screen.

When the items selected depending upon the second input are determined, the screen control module **170** controls the display **150** to display, in real time, that the items have been selected according to the second input at step **S310**. For example, when the user selects first to tenth items through the second input, the screen control module **170** displays the selected first to tenth items such that the first to tenth items are distinguished from the unselected items. At this time, the screen control module **170** controls the display **150** to check only the selection boxes displayed on the left or right side of the first to tenth items so that the first to tenth items selected depending upon the second input can be distinguished from the unselected items.

FIG. **4** is a flowchart illustrating a method of selecting one or more items by an electronic device (e.g., the electronic device **101**), according to an embodiment of the present invention.

Referring to FIG. **4**, the electronic device **101** receives a first input from a user at step **S402**. The first input received in step **S402** may be a user input for executing a multi-selection mode. The multi-selection mode is assumed to correspond to an operating mode for enabling the user to select a plurality of items at one time.

The screen control module **170** of the electronic device **101** controls the display **150** to display a multi-selection screen for selecting items at step **S404**. When the multi-selection screen is displayed, the screen control module **170** determines whether a second input for selecting a plurality of items has been received from the user at step **S406**. In this case, the second input may be a continuous user input subsequent to the first input. For example, if the first input is a touch input entered through two arbitrary points on a screen, the second input may be a scroll input for moving the touch input upwards and downwards or leftwards and rightwards. In addition, when the first input is a first gesture input through a camera lens, the second input may be a second gesture subsequently input after the first gesture.

When the determination result at step **S406** shows that the second input for selecting a plurality of items has not been

received from the user (e.g., no at step S406), the screen control module 170 maintains the current state of displaying the multi-selection screen, without performing separate operations.

When the determination result at step S406 shows that the second input for selecting a plurality of items has been received from the user (e.g., yes at step S406), the screen control module 170 controls the display 150 to display that the plurality of items have been selected depending upon the second input at step S408. The display 150 may distinguishably display the items selected depending upon the second input and the unselected items under control of the screen control module 170.

The screen control module 170 determines whether a third input for deselecting items has been received from the user at step S410. For example, at step S410, when the second input is assumed to be a scroll input for scrolling down a screen while two arbitrary points on the screen are selected, the third input may be a scroll input for scrolling up the screen while two arbitrary points on the screen are selected. The third input may be continuously input after the second input.

When the determination result at step S410 shows that the third input for deselecting items has been received from the user (e.g., yes at step S410), the screen control module 170 controls the display 150 to display that one or more items among the selected items has been deselected depending upon the third input at step S412. For example, at step S412, the screen control module 170 unchecks the selection boxes corresponding to the deselected items. The unchecked boxes mean that the items corresponding thereto are not selected.

Thereafter, the screen control module 170 determines whether a fourth input for processing the selected items has been received from the user at step S414. When it is determined that the fourth input for processing the selected items has been received from the user (yes at step S414), the screen control module 170 processes the selected items according to the fourth input at step S416. For example, the fourth input may be a user input for moving, copying, or deleting the selected items. The screen control module 170 moves, copies, or deletes the selected items according to the fourth input. The fourth input may be an input for other operations except for the operation of moving, copying, or deleting the items, for example, an operation of executing applications corresponding to items, an operation of deleting applications corresponding to items, and an operation of classifying the items as one category by storing them in one folder.

When the determination result at step S416 shows that the fourth input has not been received from the user (no at step S416), the screen control module 170 maintains the current state, without performing separate operations.

When the determination result at step S410 shows that the third input for deselecting items has been not received from the user (no at step S410), the screen control module 170 maintains the current state of displaying the multi-selection screen, without performing separate operations. When the third input has not been received, the screen control module 170 also determines whether the fourth input for processing the selected items has been received from the user at step S414.

According to an aspect of the present invention, a method for selecting one or more items by an electronic device includes receiving a first input for selecting two more points on a screen; in response to the first input, executing a multi-selection mode for selecting one or more items;

receiving a second input which is inputted in succession to the first input; and in response to the second input, selecting the one or more items.

FIGS. 5A-5D are diagrams illustrating screens on which an electronic device (e.g., the electronic device 101) executes a multi-selection mode, according to an embodiment of the present invention.

FIG. 5A illustrates a screen through which a user input for executing a multi-selection mode is entered, and FIG. 5B illustrates a screen on which the multi-selection mode is executed. Referring to FIGS. 5A and 5B, the display 150 displays a song list including first to ninth songs 511 to 519.

In addition, referring to FIG. 5A, the display 150 of the electronic device 101 receives a user input for executing a multi-selection mode. For example, a user may enter, into the electronic device 101, a touch input or a hovering input corresponding to an operation of dragging two arbitrary points 501 and 502 on the display 150 downwards while the two points 501 and 502 are selected.

FIG. 5B illustrates a screen on which the multi-selection mode is executed according to the user input entered into the electronic device 101, as illustrated in FIG. 5A. As illustrated in FIG. 5B, the screen control module 170 controls the display 150 to display selection boxes 530 on the left side of the first to ninth songs 511 to 519.

FIGS. 5C and 5D illustrate screens displayed on the display 150 of the electronic device 101 which executes the multi-selection mode, as illustrated in FIGS. 5A and 5B.

When the multi-selection mode is executed, the display 150 of the electronic device 101 receives, from the user, a user input for selecting a plurality of items contained in the list. FIG. 5C illustrates that the electronic device 101 receives the user input for selecting the plurality of items from the user. In this case, the user input illustrated in FIG. 5C is the same as that illustrated in FIG. 5A and may correspond to an operation of scrolling two selected points 501 and 502 on the display 150 downwards.

FIG. 5D illustrates that one or more items are selected according to the user input illustrated in FIG. 5C. The user input illustrated in FIG. 5C starts at the two points 501 and 502 on the third song 513 and stops at two points on the seventh song 517. The screen control module 170 selects all the items over which the user input has passed. Referring to FIG. 5D, the electronic device 101 displays the selected third to seventh songs 513 to 517 which correspond to all the items over which the user input illustrated in FIG. 5C has passed.

As illustrated in FIG. 5D, the screen control module 170 controls the display 150 to check only the selection boxes corresponding to the selected items (e.g., the third to seventh songs 513 to 517) among the selection boxes 530. Therefore, the user using the electronic device 101 can intuitively distinguish between the user-selected items and the unselected items.

FIGS. 6A-6D are diagrams illustrating screens on which an electronic device (e.g., the electronic device 101) executes a multi-selection mode, according to an embodiment of the present invention.

FIG. 6A illustrates a screen through which a user input for executing a multi-selection mode is entered, and FIG. 6B illustrates a screen on which the multi-selection mode is executed. Referring to FIG. 6A and FIG. 6B, the display 150 displays a song list including first to ninth songs 611 to 619.

In addition, referring to FIG. 6A, the display 150 of the electronic device 101 receives a user input for executing a multi-selection mode. For example, a user may enter, into the electronic device 101, a touch input or a hovering input

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corresponding to an operation of scrolling a screen upwards while arbitrary two points **601** and **602** on the display **150** are selected.

FIG. **6B** illustrates a screen on which the multi-selection mode is executed according to the user input entered into the electronic device **101**, as illustrated in FIG. **6A**. As illustrated in FIG. **6B**, the screen control module **170** controls the display **150** to display selection boxes **630** on the left side of the first to ninth songs **611** to **619**.

FIGS. **6C** and **6D** illustrate screens displayed on the display **150** of the electronic device **101** which executes the multi-selection mode, as illustrated in FIGS. **6A** and **6B**.

When the multi-selection mode is executed, the display **150** of the electronic device **101** receives, from the user, a user input for selecting a plurality of items contained in the list. FIG. **6C** illustrates that the electronic device **101** receives the user input for selecting the plurality of items from the user. In this case, the user input illustrated in FIG. **6C** is the same as that illustrated in FIG. **6A** and may correspond to an operation of scrolling two selected points **601** and **602** on the display **150** upwards.

FIG. **6D** illustrates that one or more items are selected according to the user input illustrated in FIG. **6C**. The user input illustrated in FIG. **6C** starts at the two points **601** and **602** on the seventh song **617** and stops at two points on the third song **613**. The screen control module **170** may select all the items over which the user input has passed. Referring to FIG. **6D**, the electronic device **101** displays the selected third to seventh songs **613** to **617** which correspond to all the items over which the user input illustrated in FIG. **6C** has passed.

As illustrated in FIG. **6D**, the screen control module **170** controls the display **150** to check only the selection boxes corresponding to the selected items (e.g., the third to seventh songs **613** to **617**) among the selection boxes **630**. Therefore, the user using the electronic device **101** can intuitively distinguish between the user-selected items and the unselected items.

FIGS. **7A** and **7B** are diagrams illustrating screens on which an electronic device (e.g., the electronic device **101**) executes a multi-selection mode, according to an embodiment of the present invention.

Referring to FIGS. **7A** and **7B**, the display **150** displays a song list including first to ninth songs **711** to **719**. FIGS. **7A** and **7B** illustrate that the display **150** of the electronic device **101** receives a user input for executing a multi-selection mode. As illustrated in FIGS. **7A** and **7B**, a user may enter, into the electronic device **101**, a touch input or a hovering input corresponding to an operation of scrolling a screen downwards while two arbitrary points **701** and **702** or **703** and **704** on the display **150** are selected.

In addition, arrows **751** and **752** illustrated in FIGS. **7A** and **7B** represent speeds at which the song list is scrolled. The distance $d1$ between the two arbitrary points **701** and **702** at which the user input is entered in FIG. **7A** is shorter than the distance $d2$ between the two arbitrary points **703** and **704** at which the user input is entered in FIG. **7B**. The speed at which the list having the items listed therein is scrolled may be proportional to the distance $d1$ between the two points **701** and **702** or the distance $d2$ between the two points **703** and **704**. For example, a speed **752** at which the song list in FIG. **7B** is scrolled downwards may be higher than a speed **751** at which the song list in FIG. **7A** is scrolled downwards. The user may control the speed at which the song list is scrolled, by regulating the distance $d1$ between the two points **701** and **702** or the distance $d2$ between the two points **703** and **704**.

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Although the speed at which the list having the items listed therein is scrolled is proportional to the distance $d1$ between the two points **701** and **702** or the distance $d2$ between the two points **703** and **704** in FIGS. **7A** and **7B**, the speed at which the list is scrolled may also be inversely proportional to the distance $d1$ between the two points **701** and **702** or the distance $d2$ between the two points **703** and **704**. The screen control module **170** controls the speed at which the list is scrolled, namely, the scroll speed in real time, depending upon the distance $d1$ between the two points **701** and **702** or the distance $d2$ between the two points **703** and **704**. For example, when the distance $d1$ between the two points **701** and **702** or the distance $d2$ between the two points **703** and **704** is increased, the scroll speed may be increased, and when the distance $d1$ between the two points **701** and **702** or the distance $d2$ between the two points **703** and **704** is decreased, the scroll speed may be decreased. In another example, when the distance $d1$ between the two points **701** and **702** or the distance $d2$ between the two points **703** and **704** is increased, the scroll speed may also be decreased, and when the distance $d1$ between the two points **701** and **702** or the distance $d2$ between the two points **703** and **704** is decreased, the scroll speed may also be increased.

FIGS. **8A-8H** are diagrams illustrating screens on which an electronic device (e.g., the electronic device **101**) executes a multi-selection mode, according to an embodiment of the present invention. Although FIGS. **8A-8H** are illustrated, operations of the electronic device **101** may be performed in order of FIGS. **8A** to **8H**.

FIG. **8A** illustrates a screen through which a user input for executing a multi-selection mode is entered, and FIG. **8B** illustrates a screen on which the multi-selection mode is executed. Referring to FIGS. **8A** and **8B**, the display **150** displays a gallery containing images or icons corresponding thereto. There are four images in each of rows **811** to **818** in the gallery illustrated in FIGS. **8A** to **8H**.

Referring to FIG. **8A**, the display **150** of the electronic device **101** receives a user input for executing a multi-selection mode. For example, a user may enter, into the electronic device **101**, a touch input or a hovering input for selecting two arbitrary points **801** and **802** on the display **150**.

FIG. **8B** illustrates a screen switched to a multi-selection mode according to the user input illustrated in FIG. **8A**. When the screen is switched to the multi-selection mode, selection boxes may be displayed on images.

FIG. **8C** illustrates a screen through which a user input for selecting a plurality of images is received, and FIG. **8D** illustrates images selected according to the user input illustrated in FIG. **8C**.

Referring to FIG. **8C**, a user input for scrolling the screen downwards is entered while two arbitrary points **801** and **802** are selected. In addition, the user input extends from the first row **811** to the fourth row **814**. Therefore, all images in the first to fourth rows **811** to **814** are selected as illustrated in FIG. **8D**.

FIG. **8E** illustrates a user input which is an extension of the user input illustrated in FIG. **8C**, and FIG. **8F** illustrates images selected according to the user input illustrated in FIG. **8C** and FIG. **8E**. The gallery is scrolled depending upon the scroll input (user input), and thus the images in the third to eighth rows **813** to **818** are displayed on the screen.

Referring to FIG. **8E**, the user input for scrolling the screen downwards while the two arbitrary points **801** and **802** are selected, as illustrated in FIG. **8C**, extends to the seventh row **817**. Therefore all images in the first to seventh rows **811** to **817** are selected as illustrated in FIG. **8F**.

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FIG. 8G illustrates a screen through which a user input (scroll input) for deselecting images is received while the images in the first to seventh rows **811** to **817** are selected, as illustrated in FIG. 8F and FIG. 8H illustrates a screen on which some of the items are deselected according to the user input for deselecting images.

Referring to FIG. 8G, a user input for scrolling the screen upwards while two arbitrary points **803** and **804** are selected extends from the seventh row **817** to the fifth row **815**. Therefore, the images in the fifth to seventh rows **815** to **817** are deselected and only the images in the first to fifth rows **811** to **815** are selected as illustrated in FIG. 8H.

FIGS. 9A and 9B are diagrams illustrating screens on which an electronic device (e.g., the electronic device **101**) executes a multi-selection mode, according to an embodiment of the present invention.

FIG. 9A illustrates a screen through which a user input for executing a multi-selection mode is entered, and FIG. 9B illustrates a screen on which the multi-selection mode is executed. Referring to FIGS. 9A and 9B, the display **150** displays a gallery containing images or icons corresponding thereto. There are four images in each of rows **911-916** of the gallery illustrated in FIGS. 9A and 9B.

Referring to FIG. 9A, a user input for executing a multi-selection mode may be a scroll input entered by arbitrarily selecting a first point **901** on a screen and then scrolling the screen downwards from a point other than the first point **901**, for example, a second point **902**. In this case, the first point **901** may be a fixed point on the screen and may also be located anywhere on the left side of the second point **902**. In addition, a user may request the electronic device **101** to execute the multi-selection mode by scrolling the screen upwards or downwards from the second point **902**. Furthermore, all items in a region where the scroll input passes over the screen may be selected.

FIG. 9B illustrates items selected according to the user input illustrated in FIG. 9A. The scroll input passes over the second to fourth rows **912** to **914** so that all items in the second to fourth rows **912** to **914** may be selected.

The screen control module **170** determines the coordinates of the first point **901**. Assuming that a horizontal axis of the screen corresponds to the X axis and a vertical axis thereof corresponds to the Y axis, the screen control module **170** determines the X and Y coordinates of the first point **901**. For example, the screen is assumed to have the X coordinate ranging from 0 to 840 and the Y coordinate ranging from 0 to 1280. In addition, the coordinates of the first point **901** is assumed to be (n1, n2). While the items **911** to **918** are scrolled downwards by the scroll input, the screen control module **170** may determine items having the same Y coordinate as the first point **901**, as selected items. That is, the screen control module **170** determines that all items passing through the Y axis having a value of n2 are selected.

The screen control module **170** also determines that all items having the same Y coordinate as the first point **901** are deselected.

FIGS. 10A and 10B are diagrams illustrating screens on which an electronic device (e.g., the electronic device **101**) executes a multi-selection mode, according to an embodiment of the present invention.

FIG. 10A illustrates a case in which a screen scroll speed is gradually increased, and FIG. 10B illustrates a case in which a screen scroll speed is gradually decreased. FIGS. 10A and 10B illustrate screens for displaying a gallery having images listed therein, and rows **1011** to **1016**, each of which contains four images, are displayed thereon.

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Referring to FIG. 10A, the distance between two points **1001** and **1002** at which a user input is received is gradually increased. When the distance between the two points **1001** and **1002** is increased, the screen control module **170** of the electronic device **101** deforms and displays items adjacent to the two points **1001** and **1002**. For example, images in the fourth row **1014** may be displayed in the form of being bent inward. Therefore, the user can intuitively recognize that the screen scroll speed has been increased.

Referring to FIG. 10B, the distance between two points **1003** and **1004** at which a user input is received is gradually decreased. When the distance between the two points **1003** and **1004** is decreased, the screen control module **170** of the electronic device **101** also deforms and displays items adjacent to the two points **1003** and **1004**. For example, the images in the fourth row **1014** may be displayed in the form of being bent outward. Therefore, the user can intuitively recognize that the screen scroll speed has been decreased.

FIG. 11 is a block diagram **1100** of an electronic device **1101**, according to an embodiment of the present invention. The electronic device **1101** may constitute, for example, all or a part of the electronic device **101** illustrated in FIG. 1.

Referring to FIG. 11, the electronic device **1101** includes at least one Application Processor (AP) **1110**, a communication module **1120**, a Subscriber Identifier Module (SIM) card **1124**, a memory **1130**, a sensor module **1140**, an input module **1150**, a display **1160**, an interface **1170**, an audio module **1180**, a camera module **1191**, a power management module **1195**, a batten **1196**, an indicator **1197**, and a motor **1198**.

The AP **1110** controls a plurality of hardware or software components connected thereto by driving an operating system or an application program, process various types of data including multimedia data, and perform calculations. The AP **1110** may be embodied as, for example, a System on Chip (SoC). The AP **1110** may further include a Graphic Processing Unit (GPU).

The communication module **1120** (e.g., the communication interface **160**) performs data transmission/reception in communication between the electronic device **1101** (e.g., the electronic device **101**) and other electronic devices (e.g., the electronic device **104** or the server **106**) connected thereto through a network. The communication module **1120** includes a cellular module **1121**, a Wi-Fi module **1123**, a BT module **1125**, a GPS module **1127**, an NFC module **1128**, and a Radio Frequency (RF) module **1129**.

The cellular module **1121** provides a voice call, a video call, a message service, or an Internet service through a communication network (e.g., LTE, LTE-A, CDMA, WCDMA, UMTS, WiBro, or GSM). In addition, the cellular module **1121** identifies and authenticates an electronic device in a communication network using, for example, a subscriber identification module (e.g., the SIM card **1124**). The cellular module **1121** performs at least some functions which the AP **1110** can provide. For example, the cellular module **1121** performs at least a part of a multimedia control function.

The cellular module **1121** may include a Communication Processor (CP). In addition, the cellular module **1121** may be implemented by, for example, an SoC. Although the elements, such as the cellular module **1121** (e.g., the communication processor), the memory **1130**, and the power management module **1195**, are illustrated in FIG. 11 as being separated from the AP **1110**, the AP **1110** may include at least some of the aforementioned elements (e.g., the cellular module **1121**).

The AP **1110** or the cellular module **1121** (e.g., the communication processor) loads instructions or data, received from at least one of a non-volatile memory and other elements connected thereto, in a volatile memory and process the loaded instructions or data. In addition, the AP **1110** or the cellular module **1121** stores data received from or created by at least one of the other elements in a non-volatile memory.

The Wi-Fi module **1123**, the BT module **1125**, the GPS module **1127**, and the NFC module **1128** may include, for example, a processor for processing data transmitted/received through the corresponding module. Although the cellular module **1121**, the Wi-Fi module **1123**, the BT module **1125**, the GPS module **1127**, and the NFC module **1128** are illustrated as separate blocks in FIG. **11**, at least some (for example, two or more) of them may be included in one Integrated Chip (IC) or one IC package. For example, at least some processors corresponding to the cellular module **1121**, the Wi-Fi module **1123**, the BT module **1125**, the GPS module **1127**, and the NFC module **1128**, respectively, (e.g., a communication processor corresponding to the cellular module **1121** and a Wi-Fi processor corresponding to the Wi-Fi module **1123**) may be implemented by a single SoC.

The RF module **1129** transmits/receives data, for example, an RF signal. Although not illustrated, the RF module **1129** may include, for example, a transceiver, a Power Amp Module (PAM), a frequency filter, or a Low Noise Amplifier (LNA). In addition, the RF module **1129** may further include a component, such as a conductor or a conductive wire, for transmitting/receiving an electromagnetic wave in a free space in wireless communication.

Although the cellular module **1121**, the Wi-Fi module **1123**, the BT module **1125**, the GPS module **1127**, and the NFC module **1128** are illustrated as sharing one RF module **1129** in FIG. **11**, at least one of them may transmit/receive the RF signal through a separate RF module.

The SIM card **1124** is a card including a subscriber identification module and is inserted into a slot formed in a particular portion of the electronic device. The SIM card **1124** includes unique identification information (e.g., Integrated Circuit Card Identifier (ICCID)) or subscriber information (e.g., International Mobile Subscriber Identity (IMSI)).

The memory **1130** (e.g., the memory **130**) includes an internal memory **1132** and an external memory **1134**. The internal memory **1132** may include at least one of a volatile memory (e.g., a Dynamic Random Access Memory (DRAM), a Static RAM (SRAM), and a Synchronous Dynamic RAM (SDRAM)) and a non-volatile memory (e.g., a One Time Programmable Read Only Memory (OTPROM), a Programmable ROM (PROM), an Erasable and Programmable ROM (EPROM), an Electrically Erasable and Programmable ROM (EEPROM), a mask ROM, a flash ROM, a NAND flash memory, and a NOR flash memory).

The internal memory **1132** may be a Solid State Drive (SSD). The external memory **1134** may further include a flash drive, for example, a Compact Flash (CF), a Secure Digital (SD), a Micro Secure Digital (Micro-SD), a Mini Secure Digital (Mini-SD), an extreme Digital (xD), or a memory stick. The external memory **1134** may be functionally connected to the electronic device **1101** through various interfaces. The electronic device **1101** may further include a storage device (or storage medium) such as a hard drive.

The sensor module **1140** measures a physical quantity or detects an operating state of the electronic device **1101** and converts the measured or detected information into an electronic signal. The sensor module **1140** includes at least

one of, for example, a gesture sensor **1140A**, a gyro sensor **1140B**, an atmospheric pressure sensor **1140C**, a magnetic sensor **1140D**, an acceleration sensor **1140E**, a grip sensor **1140F**, a proximity sensor **1140G**, a color sensor **1140H** (e.g., Red, Green, and Blue (RGB) sensor), a biometric sensor **1140I**, a temperature/humidity sensor **1140J**, an illumination sensor **1140K**, and an Ultra Violet (UV) sensor **1140M**. Additionally or alternatively, the sensor module **1140** may include, for example, an E-nose sensor, an ElectroMyoGraphy (EMG) sensor, an ElectroEncephaloGram (EEG) sensor, an ElectroCardioGram (ECG) sensor, an Infrared (IR) sensor, an iris sensor, or a fingerprint sensor. The sensor module **1140** may further include a control circuit for controlling at least one sensor included therein.

The input module **1150** includes a touch panel **1152**, a (digital) pen sensor **1154**, a key **1156**, and an ultrasonic input device **1158**. The touch panel **1152** recognizes a touch input that is at least one of, for example, a capacitive type, a resistive type, an infrared type, and an ultrasonic type. The touch panel **1152** may further include a control circuit. In the case of the capacitive type touch panel, physical contact or proximity recognition is possible. The touch panel **1152** may further include a tactile layer. In this case, the touch panel **1152** may provide a tactile reaction to a user.

The (digital) pen sensor **1154** may be implemented, for example, using the same or similar method to receiving a user's touch input or using a separate recognition sheet.

The key **1156** may include, for example, a physical button, an optical key or a keypad.

The ultrasonic input device **1158** is a device which detects an acoustic wave using a microphone **1188** in the electronic device **1101** through an input unit generating an ultrasonic signal to identify data, and the input device **1158** performs wireless recognition. The electronic device **1101** also receives a user input from an external device (e.g., a computer or a server) connected thereto using the communication module **1120**.

The display **1160** (e.g., the display **150**) includes a panel **1162**, a hologram device **1164**, and a projector **1166**. The panel **1162** may be, for example, a Liquid Crystal Display (LCD) or Active-Matrix Organic Light Emitting Diode (AM-OLED). The panel **1162** may be, for example, flexible, transparent, or wearable. The panel **1162** may also be configured as one module together with the touch panel **1152**.

The hologram device **1164** shows a stereoscopic image in the air using interference of light.

The projector **1166** projects light onto a screen to display an image. For example, the screen may be located inside or outside the electronic device **1101**. The display **1160** may further include a control circuit for controlling the panel **1162**, the hologram device **1164**, or the projector **1166**.

The interface **1170** includes, for example, a High-Definition Multimedia Interface (HDMI) **1172**, a Universal Serial Bus (USB) **1174**, an optical interface **1176**, or a D-subminiature (D-sub) **1178**. The interface **1170** may be included in, for example, the communication interface **160** illustrated in FIG. **1**. Additionally or alternatively, the interface **1170** may include, for example, a Mobile High-definition Link (MHL) interface, a Secure Digital (SD) card/Multi-Media Card (MMC) interface, or an Infrared Data Association (IrDA) standard interface.

The audio module **1180** bilaterally converts a sound and an electronic signal. At least some elements of the audio module **1180** may be included in, for example, the input/output interface **140** illustrated in FIG. **1**. The audio module **1180** processes voice information input or output through,

for example, a speaker **1182**, a receiver **1184**, earphones **1186**, or the microphone **1188**.

The camera module **1191** is a device for capturing a still image and a video. The camera module **291** may include one or more image sensors (e.g., a front or rear sensor), a lens, an Image Signal Processor (ISP) or a flash (e.g., an LED or xenon lamp).

The power management module **1195** manages electric power of the electronic device **1101**. Although not illustrated, the power management module **1195** may include, for example, a Power Management Integrated Circuit (PMIC), a charger Integrated Circuit (IC), or a battery gauge.

The PMIC may be mounted to, for example, an integrated circuit or an SoC semiconductor. Charging methods may be classified into a wired charging method and a wireless charging method. The charger IC charges a battery and prevents over voltage or over current from a charger. The charger IC may include a charger IC for at least one of the wired charging method and the wireless charging method. Examples of the wireless charging method include a magnetic resonance type, a magnetic induction type, or an electromagnetic wave type, and an additional circuit for wireless charging, such as a coil loop circuit, a resonance circuit, or a rectifier circuit may be added.

The battery gauge measures, for example, a residual quantity of the battery **1196**, or a voltage, a current, or a temperature during the charging. The battery **1196** stores or generates electricity and supply power to the electronic device **1101** using the stored or generated electricity. The battery **1196** may include, for example, a rechargeable battery or a solar battery.

The indicator **1197** displays a particular status of the electronic device **1101** or some parts thereof (e.g., the AP **1110**), for example, a booting status, a message status, or a charging status. The motor **1198** converts an electrical signal into mechanical vibration. Although not illustrated, the electronic device **1101** may include a processing unit (e.g., GPU) for supporting a mobile TV. The processing unit processes media data according to a standard, such as Digital Multimedia Broadcasting (DMB), Digital Video Broadcasting (DVB), or media flow.

The aforementioned elements of the electronic device **1100** may be constituted by one or more components, and the names of corresponding elements may vary with a type of electronic device.

The electronic device **1100** may include at least one of the aforementioned elements. Some elements may be omitted or other additional elements may be further included in the electronic device. In addition, a single entity constituted by combining some elements of the electronic device may equivalently perform functions of the corresponding elements prior to the combination thereof.

FIG. **12** is a signaling diagram illustrating a communication protocol **1200** between a plurality of electronic devices (e.g., an electronic device **1210** and an electronic device **1230**), according to an embodiment of the present invention.

Referring to FIG. **12**, a communication protocol **1200** may include, for example, a device discovery protocol **1251**, a capability exchange protocol **1253**, a network protocol **1255**, and an application protocol **1257**.

The device discovery protocol **1251** may be a protocol that allows the electronic devices **1210**, **1230** to detect an external electronic device capable of communicating therewith or connect the detected external electronic device thereto. For example, the electronic device **1210** (e.g., the electronic device **101**) may detect the electronic device **1230** (e.g., the electronic device **104**), as a device which can

communicate therewith, through a communication method (e.g., Wi-Fi, BT, or USB) which can be used in the electronic device **1210**, using the device discovery protocol **1251**. For communication with the electronic device **1230**, the electronic device **1210** acquires and stores identification information on the detected electronic device **1230** using the device discovery protocol **1251**. For example, the electronic device **1210** establishes the communication with the electronic device **1230**, based on the identification information.

The device discovery protocol **1251** may be a protocol for mutual authentication between a plurality of electronic devices. For example, the electronic device **1210** performs authentication between the electronic device **1210** and the electronic device **1230**, based on communication information (e.g., a Media Access Control (MAC) address, a Universally Unique Identifier (UUID), a SubSystem Identifier (SSID), and an Information Provider address) for connection with the electronic device **1230**.

The capability exchange protocol **1253** may be a protocol for exchanging information related to a service function which can be supported by at least one of the electronic device **1210** and the electronic device **1230**. For example, the electronic device **1210** and the electronic device **1230** may mutually exchange information related to currently provided service functions through the capability exchange protocol **1253**. The exchangeable information may include identification information indicating a particular service among a plurality of services which can be supported by the electronic device **1210** or the electronic device **1230**. For example, the electronic device **1210** receives identification information of a particular service, provided by the electronic device **1230**, from the electronic device **1230** through the capability exchange protocol **1253**. In this case, the first electronic device **1210** determines whether the electronic device **1210** supports the particular service, based on the received identification information.

The network protocol **1255** may be a protocol for controlling flow of data transmitted/received to provide a service between the electronic devices **1210**, **1230**, which are connected to communicate with each other. For example, at least one of the electronic device **1210** and the electronic device **1230** controls an error or data quality using the network protocol **1255**. Additionally or alternatively, the network protocol **1255** determines a transmission format of data transmitted/received between the electronic device **1210** and the electronic device **1230**. In addition, using the network protocol **1255**, at least one of the electronic device **1210** and the electronic device **1230** performs session management (e.g., session connection or session termination) for data exchange between the electronic devices.

The application protocol **1257** may be a protocol for providing a procedure or information for exchanging data related to a service provided to an external electronic device. For example, the electronic device **1210** (e.g., the electronic device **101**) provides a service to the electronic device **1230** (e.g., the electronic device **104** or the server **106**) through the application protocol **1257**.

The communication protocol **1200** may include a standard communication protocol, a communication protocol designated by an individual or organization (e.g., a communication protocol self-designated by a communication device maker or a network provider) or a combination thereof.

The term “module” used in the embodiments of the present invention may refer to, for example, a unit including one or more combinations of hardware, software, and firmware. The “module” may be interchangeable with a term, such as a unit, a logic, a logical block, a component, or a

circuit. The “module” may be the smallest unit of an integrated component or a part thereof. The “module” may be a minimum unit for performing one or more functions or a part thereof. The “module” may be mechanically or electronically implemented. For example, the “module” a

may include at least one of an Application-Specific Integrated Circuit (ASIC) chip, a Field-Programmable Gate Arrays (FPGA), and a programmable-logic device for performing operations which are known or may be developed hereinafter.

At least part of a device (for example, modules or functions thereof) or a method (for example, operations) may be embodied by, for example, an instruction stored in a computer readable storage medium provided in a form of a programming module. When the instruction is performed by at least one processor (for example, the processor **120**), the at least one processor may perform a function corresponding to the instruction. The computer-readable storage medium may be, for example, the memory **130**. At least some of the programming modules may be implemented (for example, executed) by, for example, the processor **120**. At least a part of the programming module may include, for example, a module, a program, a routine, a set of instructions and/or a process for performing one or more functions.

The computer-readable recording medium may include magnetic media such as a hard disk, a floppy disk, and a magnetic tape, optical media such as a Compact Disc Read Only Memory (CD-ROM) and a Digital Versatile Disc (DVD), magneto-optical media such as a floptical disk, and hardware devices specially configured to store and perform a program instruction (for example, programming module), such as a Read Only Memory (ROM), a Random Access Memory (RAM), a flash memory and the like. In addition, the program instructions may include high class language codes, which can be executed in a computer by using an interpreter, as well as machine codes made by a compiler. The aforementioned hardware device may be configured to operate as one or more software modules in order to perform the operation of various embodiments of the present invention, and vice versa.

A module or a programming module according to the present invention may include at least one of the described component elements, a few of the component elements may be omitted, or additional component elements may be included. Operations executed by a module, a programming module, or other component elements may be executed sequentially, in parallel, repeatedly, or in a heuristic manner. Furthermore, some operations may be executed in a different order or may be omitted, or other operations may be added.

While the present invention has been shown and described with reference to certain embodiments thereof, it should be understood by those skilled in the art that many variations and modifications of the method and apparatus described herein will still fall within the spirit and scope of the present invention as defined in the appended claims and their equivalents.

What is claimed is:

1. A method for selecting one or more thumbnails by an electronic device, the method comprising:

in a scroll mode in which scrolling is performed without thumbnail selection in response to a drag input of two selected points, displaying a first set of thumbnails among a plurality of thumbnails on a screen by rows and columns while an additional row of thumbnails arranged after the first set of thumbnails is not displayed on the screen, wherein the plurality of thumbnails include the first set of thumbnails and the addi-

tional row of thumbnails arranged after the first set of thumbnails, and the plurality of thumbnails correspond to a plurality of images captured by the electronic device;

detecting a user input for entering a multiple selection mode;

in the multiple selection mode, detecting a first touch input on at least one first thumbnail on a first row of the first set of thumbnails on the screen while displaying the first set of thumbnails and selecting the at least one first thumbnail;

in the multiple selection mode, detecting that the first touch input is on a second row of the first set of thumbnails according to a moving of the first touch input;

in the multiple selection mode, after the first touch input is on the second row of the first set of thumbnails, as a response to identifying that a first coordinate value related to the first touch input becomes different from a second coordinate value related to the second row of the first set of thumbnails on the screen according to a moving of the first touch input, selecting all of the thumbnails arranged in the second row of the first set of thumbnails passed over by the first touch input, the all of the thumbnails including at least one touched thumbnail arranged in the second row of the first set of thumbnails, and at least one untouched thumbnail arranged in the second row of the first set of thumbnails, wherein the first coordinate value and the second coordinate value are related to a vertical axis;

in the multiple selection mode, displaying the additional row of thumbnails arranged after the first set of thumbnails among the plurality of thumbnails by scrolling the screen based on the moving of the first touch input on the first set of thumbnails;

in the multiple selection mode, based on a first position of the first touch input being on a second thumbnail in the additional row of thumbnails, selecting the touched second thumbnail in the additional row of thumbnails, wherein the first touch input is a continuous dragging input which starts from the at least one first thumbnail and ends in the second thumbnail being displayed by the scrolling the screen; and

based on receiving a second input for deleting, deleting selected thumbnails and images corresponding to the selected thumbnails among the plurality of thumbnails, wherein the selected thumbnails include the selected at least one first thumbnail, the selected at least one touched thumbnail, the selected at least one untouched thumbnail, and the selected second thumbnail,

wherein if a horizontal distance between the two points is decreased, thumbnails adjacent to the two selected points are displayed in the form of being bent outwards, and

wherein if the horizontal distance between the two points is increased, thumbnails adjacent to the two selected points are displayed in the form of being bent inwards.

2. The method of claim 1, further comprising, after receiving the moving of the first touch input:

receiving a third touch input; and

in response to a moving of the third touch input, deselecting one or more of the selected at least one touched thumbnail, the selected at least one first thumbnail, the selected at least one untouched thumbnail, and the selected second thumbnail.

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3. The method of claim 2, wherein the moving of the third touch input is in an opposite direction to the moving of the first touch input.

4. The method of claim 1, further comprising:

processing the selected at least one touched thumbnail, 5
the selected at least one untouched thumbnail, and the selected second thumbnail according to an input for processing the selected at least one touched thumbnail, the selected at least one first thumbnail, the selected at least one untouched thumbnail, and the selected second 10
thumbnail, the input being received through the display.

5. The method of claim 1, further comprising:

displaying checked select boxes corresponding to each of the at least one touched thumbnail, the selected at least one untouched thumbnail, and the selected second 15
thumbnail.

6. The method of claim 1, wherein the first touch input is a hovering input.

7. The method of claim 1, further comprising:

receiving a third input after receiving the moving of the 20
first touch input; and

in response to the third input, deselecting at least one of the selected one touched thumbnail and the selected second thumbnail.

8. The method of claim 1, wherein the second input is 25
received through a display.

9. The method of claim 1, wherein scrolling the screen based on the moving of the first touch input on the first set of thumbnails further comprises dragging the first touch input from a first position on the first set of thumbnails to a 30
second position on the additional row of thumbnails.

10. An electronic device for selecting one or more thumbnails, comprising:

a display; and

a processor configured to:

control the display to in a scroll mode in which scrolling is performed without thumbnail selection in response to a drag input of two selected points, display a first set of thumbnails among a plurality of thumbnails on a screen by rows and columns while an additional row of 40
thumbnails arranged after the first set of thumbnails is not displayed on the screen, wherein the plurality of thumbnails include the first set of thumbnails and the additional row of thumbnails arranged after the first set of thumbnails, and the plurality of thumbnails corre- 45
spond to a plurality of images captured by the electronic device,

detect a user input for entering a multiple selection mode, in the multiple selection mode, detect a first touch input on at least one first thumbnail on a first row of the first 50
set of thumbnails on the screen while displaying the first set of thumbnails and select the at least one first thumbnail,

in the multiple selection mode, detect that the first touch input is on a second row of the first set of thumbnails 55
according to a moving of the first touch input,

in the multiple selection mode, after the first touch input is on the second row of the first set of thumbnails, as a response to identifying that a first coordinate value related to the first touch input is different from a second 60
coordinate value related to the second row of the first set of thumbnails on the screen according to a moving of the first touch input, select all of the thumbnails arranged in the second row of the first set of thumbnails, the all of the thumbnails including at least one 65
touched thumbnail arranged in the second row of the first set of thumbnails, and at least one untouched

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thumbnail arranged in the second row of the first set of thumbnails, wherein the first coordinate value and the second coordinate value are related to a vertical axis, in the multiple selection mode, control the display to display the additional row of thumbnails arranged after the first set of thumbnails among the plurality of thumbnails by scrolling the screen based on the moving of the first touch input on the first set of thumbnails, in the multiple selection mode, based on a first position of the first touch input being on a second thumbnail on a first column in the additional row of thumbnails, select the touched second thumbnail in the additional row of thumbnails, wherein the first touch input is a continuous dragging input which starts from the at least one first thumbnail and ends in the second thumbnail being displayed by the scrolling the screen, and

based on receiving a second input for deleting, delete selected thumbnails and images corresponding to the selected thumbnails among the plurality of thumbnails, wherein the selected thumbnails include the selected at least one touched thumbnail, the selected at least one first thumbnail, the selected at least one untouched thumbnail, and the selected second thumbnail,

wherein if a horizontal distance between the two points is decreased, thumbnails adjacent to the two selected points are displayed in the form of being bent outwards, and

wherein if the horizontal distance between the two points is increased, thumbnails adjacent to the two selected points are displayed in the form of being bent inwards.

11. The electronic device of claim 10, wherein the processor is further configured to, after receiving the moving of the first touch input:

receive a third touch input, and

in response to a moving of the third touch input, deselect one or more of the selected at least one touched thumbnail, the selected at least one first thumbnail, the selected at least one untouched thumbnail, and the selected second thumbnail.

12. The electronic device of claim 11, wherein the moving of the third touch input is in an opposite direction to the moving of the first touch input.

13. The electronic device of claim 10, wherein the processor is further configured to process the selected at least one touched thumbnail, the selected at least one untouched thumbnail, and the selected second thumbnail according to an input for processing the selected at least one touched thumbnail, the selected at least one first thumbnail, the selected at least one untouched thumbnail, and the selected second thumbnail, the input being received through the display.

14. The electronic device of claim 10, wherein the processor is further configured to control the display to display checked select boxes corresponding to each of the at least one touched thumbnail, the selected at least one untouched thumbnail, and the selected second thumbnail.

15. The electronic device of claim 10, wherein the first touch input is a hovering input.

16. The electronic device of claim 10, wherein, after receiving the moving of the first touch input, the processor is further configured to:

receive a third input; and

in response to the third input, deselect at least one of the selected one touched thumbnail and the selected second thumbnail.

17. The electronic device of claim 10, wherein the second input is received through the display.

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18. The electronic device of claim 10, wherein scrolling the screen based on the moving of the first touch input on the first set of thumbnails further comprises dragging the first touch input from a first position on the first set of thumbnails to a second position on the additional row of thumbnails.

19. A non-transitory computer-readable storage medium storing commands, wherein the commands are configured to be executed by at least one processor to command the at least one processor to perform at least one operation, the at least one operation comprising:

In a scroll mode in which scrolling is performed without thumbnail selection in response to a drag input of two selected points, displaying a first set of thumbnails among a plurality of thumbnails on a screen by rows and columns while an additional row of thumbnails arranged after the first set of thumbnails is not displayed on the screen, wherein the plurality of thumbnails include the first set of thumbnails and the additional row of thumbnails arranged after the first set of thumbnails, and the plurality of thumbnails correspond to a plurality of images captured by the electronic device;

detecting a user input for entering a multiple selection mode;

in the multiple selection mode, detecting a first touch input on at least one first thumbnail on a first row of the first set of thumbnails on the screen while displaying the first set of thumbnails and selecting the at least one first thumbnail;

in the multiple selection mode, detecting that the first touch input is on a second row of the first set of thumbnails according to a moving of the first touch input;

in the multiple selection mode, after the first touch input is on the second row of the first set of thumbnails, as a response to identifying that a first coordinate value related to the first touch input is different from a second coordinate value related to the second row of the first

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set of thumbnails on the screen according to a moving of the first touch input, selecting all of the thumbnails arranged in the second row of the first set of thumbnails passed over by the first touch input, the all of the thumbnails including at least one touched thumbnail arranged in the second row of the first set of thumbnails, and at least one untouched thumbnail arranged in the second row of the first set of thumbnails, wherein the first coordinate value and the second coordinate value are related to a vertical axis;

in the multiple selection mode, displaying the additional row of thumbnails arranged after the first set of thumbnails among the plurality of thumbnails by scrolling the screen based on the moving of the first touch input on the first set of thumbnails;

in the multiple selection mode, based on a first position of the first touch input being on a second thumbnail on a first column in the additional row of thumbnails, selecting the touched second thumbnail in the additional row of thumbnails, wherein the first touch input is a continuous dragging input which starts from the at least one first thumbnail and ends in the second thumbnail being displayed by the scrolling the screen; and

based on receiving a second input for deleting, deleting selected thumbnails and images corresponding to the selected thumbnails among the plurality of thumbnails, wherein the selected thumbnails include the selected at least one first thumbnail, the selected at least one touched thumbnail, the selected at least one untouched thumbnail, and the selected second thumbnail,

wherein if a horizontal distance between the two points is decreased, thumbnails adjacent to the two selected points are displayed in the form of being bent outwards, and

wherein if the horizontal distance between the two points is increased, thumbnails adjacent to the two selected points are displayed in the form of being bent inwards.

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